

Curriculum Vitae

Aline CARNEIRO VIANA

1) Parcours Professionnel / *Professional history*

Statut et fonction: Inria Research Scientist.

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Expériences professionnelles antérieures / *Previous professional experiences*

Dates début / <i>Start</i>	Dates fin / <i>End</i>	Établissements / <i>Institutions</i>	Fonctions et statuts ² / <i>Positions and status²</i>
Oct. 2006	to date	Inria Saclay, France	CR1 (CRN au "7eme échelon" since 1st Sep. 2017) ↔ Head of TRiBE (Jan. 2019 and EPI since Jun. 2019) ↔ Head of INFINE-POST (Feb. 2018-Jan.2019) Previous teams: INFINE (2014-2018), HIPERCOM (2011-2012), ASAP (2006-2009)
Jan. 2013	to date	LINCS ¹ , France	Associate member
Nov. 2009	Oct. 2010	Technische Universität Berlin, Germany	Visiting scholar (Inria sabbatical year)
Oct. 2005	Sep. 2006	Inria Rennes, France	Inria Postdoctoral Fellow
Jan. 2002	Jul. 2005	LIP6/UPMC, Paris, France	PhD student
1998	2000	Apice Telemática, Brazil	Start-up funder

2) Diplômes / *Education*

Dates début / <i>Start</i>	Dates fin / <i>End</i>	Établissements / <i>Institutions</i>	Fonctions et statuts ² / <i>Positions and status²</i>
Dec. 2011	Dec. 2011	UPMC, Paris, France	HDR
Jan. 2002	Jul. 2005	LIP6/UPMC, Paris, France	PhD in Computer Science
1999	2001	Federal Univ. of Goiás (UFG), Brazil Federal Univ. of Rio de Janeiro (UFRJ)	M.Sc. in Electrical Engineering
1994	1998	Federal Univ. of Goiás (UFG), Brazil	B.Sc. in Computer Science
1990	1993	Technical High School (CEFET), Brazil	Technical High school in Telecommunication

3) Interruptions de carrière / *Career breaks*

Date début / <i>Start</i>	Date fin / <i>End</i>	Motif de l'interruption / <i>Reason for interruption</i>
Sep. 10, 2012	Dec. 30, 2012	Maternity Leave
Sep. 27, 2015	Mar. 5, 2016	Maternity Leave

4) Prix et distinctions / *Prizes and awards*

- **Nominated "10 women in networking/communications that you should WATCH"**²³ in 2016 by Networking Networking Women (N2Women) community (a discipline-specific community for researchers in the communications and networking research fields); N2Women is an ACM SIGMOBILE program, supported by the IEEE Communications Society, ACM SIGCOMM, IEEE Computer Science TCCC, CRA-W, Facebook, and NSF.
- **Two** (in 2015 and in 2019) "*Prime d'encadrement doctoral et de recherche*" (PEDR) of Inria (4 ans): Catégorie [3], Groupe Confirmé.

²<http://n2women.comsoc.org/10-women-in-networkingcommunications-that-you-should-know/>

³<https://www.inria.fr/en/centre/saclay/news/aline-carneiro-viana-portrait-of-a-researcher>

- **Top-six best paper awarded:** ACM SIGSPATIAL 2019 [88] and **Top-three best paper award,** ACM MSWIM 2013 [97], both A-ranked conferences.
item **Best poster awarded:** NetMob 2019.
- **Selected papers** for fast track journal publication:
 - ACM MSWIM 2013 → *Elsevier Performance Evaluation Journal* (two papers) [56, 97].
 - IFIP Home Networking Conference 2007 (IHN) → *Springer Annals of Telecommunications* [72].
 - IEEE PERCOM 2003 → *ACM/Springer Wireless Networks Journal* [102].

5) Encadrement d'activités de recherche / *Supervision of research activities*

I had the pleasure to work with students and post-doc fellows with different background/experiences, from different locations, and with different culture. They all helped me progress as a researcher: through the opportunity to advise them or through collaborations, they contributed to my maturity as a researcher. For all this, I claim the provided synthesis and the achieved successes of my carrier work (form 2 and 3) are also theirs.

Post-doctoral fellows (7):

1. **Sahar Hoitet** (Jan.-Sep. 2015). *From:* CentraleSupélec. *Topic:* Temporal completion of sparse call detail records (CDRs) datasets for mobility analysis [31]. *Collaborators:* M. Fiore (CNR). *Current position:* MdC L2S/CentraleSupélec.
2. **Diego P. Paramo** (2014-2015). *From:* Polytechnic University of Valencia, Spain. *Topic:* Adaptation of Topology-Based Routing Protocols for Data Gathering Applications in VANETs [68]. *Collaborators:* D. Koffman and L. Iannone (Telecom ParisTech/LINCS), J. P. Vasseur and G. Mermoud (CISCO).
3. **K. P. Naveen** (2014-2015). *From:* Indian Institute of Science, Bangalore, India . *Topic:* Wireless content caching optimization [44, 66]. *Collaborators:* L. Massoulie, E. Baccelli (Inria). *Current position:* Assistant Prof. IIT Kanpur.
4. **M. Sukru Kuran** (2013-2014). *From:* Bogazici University, Istanbul, Turkey. *Topic:* Improvement of vehicles recharging by routine-aware scheduling [46, 45]. *Collaborators:* D. Koffman and L. Iannone (Telecom ParisTech/LINCS), J. P. Vasseur and G. Mermoud (CISCO). *Current position:* Assistant Prof. at Abdullah Gül University.
5. **Massimo Vecchio** (2009-2010). *From:* IMT Institute for Advanced Studies, Lucca, Italy. *Topic:* Distributed Hash Table (DHT)-based self-organizing stock management network [8, 108]. *Collaborators:* N. Mitton (Inria). *Current position:* Associate Prof. at Univ. degli Studi eCampus, Italy.
6. **Golnaz Karbaschir** (2009-2010). *From:* LIP6/Univ. of Pierre et Marie Curie. *Topic:* Delay fairness for multiple network coding transmissions in interest-based mobile networks [34, 35, 36] *Collaborators:* K. Al Agha and S. Martin (LRI/Univ. Paris 11). *Current position:* In-Car MultiMedia Services and Connectivity.
7. **Cigdem Sengul** (2007-2008). *From:* University of Illinois, Urbana-Champaign, USA. *Topic:* Adaptative forwarding in intermittent connected networks [80, 81, 82]. *Collaborators:* R. Friedman (Technion), M. Bertier (INSA Rennes), and A.-M. Kermarrec (Inria). *Current position:* Senior Lecturer at Oxford Brookes University

PhD students (17):

1. **Diego Madariaga Roman** (Nov. 2019 – to date), Univ. of Chile and Ecole Polytechnique/IPP (**cotutelle**, CONICYT grant);
Supervision: 50% (jointly with Benjamin Bustos, NIC/Univ. of Chile);
Topic: “Short-term time series analysis and prediction for anticipatory networking”;
Goal: The extraction of motifs or mobility patterns, the detection of anomalies and concept drifts (i.e., changes in mobility patterns);
Originality: We will use motifs as well as the detection of anomalies and concept drifts to enhance the short-term mobility prediction. By using online time series analysis and its adaption against anomalies and concept drifts in the data, we intend to improve the accuracy of short-term prediction in real anticipatory networking problems.
2. **Anne Josiane Kouam Djuigne** (Nov. 2019 – to date), Ecole Polytechnique/IPP (**Inria CORDI-S**);
Supervision: 50% (jointly with Alain Tchana, ENS Lyon);
Topic: “Detection of bypass frauds in cellular network datasets”;
Goal: To detect SIMbox bypass frauds by leveraging human behavior modeling in terms of communication and mobility.
Originality: Despite the work published on it and the large number of private companies that offer detection solutions, this is still an open issue. This is mainly due the fact that SIMboxes are evolving in functionality to simulate more and more human behaviour.
3. **Lucas Santos** (Mai 2018 – to date), Federal Univ. of Minas Gerais (UFMG) Brazil;
Supervision: 40% (jointly with Pedro O. Vaz de Melo);
Topic: “Investigating causalities in habits of human visits”;

Goal: Identifying dependencies and influence of places visits by means of user mobility flow.

Originality: Causality is still an open topic in the literature, which is hard to measure and with few consensus on how it can be measured. Here, we bring the causality study to geographic visiting context: we intend to be able to infer dependencies of visits among locations. Our current results reveals how visits of points of interests are influenced by visits of surrounding locations, when considering flows of in-coming and out-going people at points of interests;

Publications: [79]

4. **Douglas Teixeira** (Nov. 2018 – to date), UFMG and Ecole Polytechnique/IPP (**cotutelle**);
Supervision: 50% (jointly with J. Almeida);
Topic: “Context-enhanced human predictability in short-term datasets with high spatial resolution”;
Joint PhD: Ecole Polytechnique, France and Federal Univ. of Minas Gerais (UFMG), Brazil. CAPES Grant;
Goal: Interpretable and extensible predictability of human mobility;
Originality: Literature on mobility predictability is based on a sophisticated compression algorithm whose output bears little resemblance to its input, making it hard to understand what makes one’s mobility more or less predictable: They lack interpretability. Besides, there is no study in the mobility condition that ensure a general computation of a context-enhanced predictability, as we proposes to do.
Publications: [88], was one of the top-six best papers at ACM SIGSPATIAL 2019 (Ranked A). One paper in submission to a transaction.
5. **Licia Amichi** (Sep. 2018 – to date), Ecole Polytechnique/IPP (**Inria CORDI-S**);
Supervision: 100% ;
Topic: “Modeling exploration factor of human beings”;
Goal: Identifying and profiling novelty-seeking behavior in human mobility.
Originality: For the first time in the literature, we intend to identify explorers and to characterize the spatiotemporal features of their exploring movements. This characterization will then be leveraged in prediction mechanisms enhanced to consider contextual information as well as exploration factors of individuals.
Publications: [1]. One paper in submission to UbiComp 2020.
6. **João Batista Borges** (Nov. 2018 – to date), UFMG, Brazil;
Supervision: 20% (jointly with Antonio F. Loureiro);
Topic: “Revealing motifs in human mobility”;
Goal: To extract motifs of mobility patterns of individuals that, when merged together, describe their daily motion and can be used to enhance mobility prediction;
Originality: Motifs will be investigated when using datasets that describe fine-grained mobility of users (i.e., GPS coordinates). Besides, we will use the Bandt-Pompe (BP) transformation to capture time series dynamic, from deterministic to completely random behaviors. We will consider a multivariate time series to consider latitude and longitude jointly. Both techniques have not been applied in the context of mobility studies.
Publications: [5].
7. **Emanuel Lima** (Oct. 2017 – to date), Univ. Porto, Portugal;
Supervision: 40% (jointly with A. Aguiar);
Goal: Design of a device-centric decision strategy for future data offloading from mobile crowdsensed datasets of passive WiFi scans;
Originality: To enable mobile devices to locally and efficiently take (i.e., where and when) future offloading decisions to WiFi infrastructure. It requires distributed and unsupervised learning of spatiotemporal connectivity zones;
Publications: [47]. One paper in submission to IEEE WoWMoN 2020.
8. **Rafael L. Costa** (Jun. 2017 – to date), Federal Univ. of Bahia (UFBA), Ecole Polytech./IPP (**cotutelle**, CAPES Grant);
Supervision: 30% (jointly with Leobino Sampaio, UFBA, and Artur Ziviani, LNCC, Brazil);
Topic: “Human-enhanced forwarding strategies for Device-to-Device (D2D) communication”;
Goal: Design of forwarding strategies for data offloading through Device-to-Device (D2D) communication, transforming mobile phone neighbors in service providers;
Originality: The selection of next hops based on mobility behavior, resource capability as well as collaboration interests of mobile phone users. A real-world dataset collected in the context of EU CHIST-ERA MACACO project brings real data on these features, strengthen realistic validation of the strategy. *Publications:* [48] is under submission and Tutorial “*Humanos no ciclo de Comunica ção.*” at SBRC 2018.
9. **Guangshuo Chen** (2014 – 2018), Ecole Polytechnique (Chinese CSC Grant);
Supervision: 80% (in collaboration with Marco Fiore, IMDEA, Madrid);
Thesis title: Human Habits Investigation: from Mobility Reconstruction to Mobile Traffic Prediction;
Goal: (1) Spatio-temporal content demand prediction of mobile users and (2) temporal completion of users’ trajectories extracted from sparse and heterogeneous traffic-oriented datasets, which are used in the prediction analysis due to their large population;
Originality: (1) 1st work presenting analysis on how per-user regularity of mobile data traffic is translated into actual predictability and the associated impacts brought by users’ visited locations. (2) 1st adaptive approach for trajectory

completion in nighttime and daytime mobility of users. Refer to Fiches 1 and 3 of Form 3.

Publications: [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 31];

Current position: Data Scientist at eBay.

10. **Roni Shigueta** (2013 – 2018), PUC-BR, Brazil (**cotutelle**);
Supervision: 50% (jointly with Mauro Fonseca, UTFPR, Brazil);
Joint PhD: Ecole Polytechnique, France and PUC-PR, Brazil;
Thesis title: Channel resource allocation of wireless interfaces of mobile devices;
Goal: To allocate channels to interfering wireless mobile devices;
Originality: The leveraging of user mobility associated with traffic history and node popularity to guide the channel allocation process in wireless networks, while quickly responding to changes in the network topology;
Publications: [83, 84, 85];
Current position: Associate Professor at University Catholic of Paraná Brazil.
11. **Felipe D. da Cunha** (2012 – 2016), UFMG, Brazil (CAPES Grant);
Supervision: 50% (jointly with Antonio F. Loureiro);
Thesis title: Exploring interactions in Vehicular Wireless Networks;
Goal: To leverage drivers' mobility and spatio-temporal routines at the design of socially inspired data dissemination for Vehicular Networks (VANETs);
Originality: Extraction of repetitive patterns among interactions in daily routine of metropolitan drivers. This knowledge was exploited and enhanced performance of literature works on data dissemination, determining when and which vehicles should broadcast data messages;
Publications: [22, 23, 24, 25, 26, 27, 28];
Current position: Associate Professor at PUC-MG, Brazil.
12. **Eduardo Oliveira Mucelli** (2011 – 2015), Ecole Polytechnique (Inria CORDI-S) ;
Supervision: 100%;
Thesis title: From human routine to more efficient mobile networks;
Goal: WiFi hotspot deployment in urban scenarios that consider density spread of population, their mobility patterns as well as traffic demand;
Originality: The first thesis work (1) unveiling persistent traits present in an individual's urban mobility (people's tendency to revisit few favorite venues using the shortest-path available) using a large variety of heterogeneous datasets; (2) presenting a per-user mobile traffic profiling methodology as well as a synthetic data traffic generator that consistently imitates real mobile traffic behavior: the *Synthetic Mobile Data Traffic Generator (MDTGen)*, available at <http://macaco.inria.fr/software/> and used by the PhD student Vinícius Braga; (3) designing WiFi hotspots deployment strategy that leverages both mobility patterns and traffic demand of mobile users. Refer to **Fiches 1 and 2 of Form 3** for further details);
Publications: [60, 61, 62, 63, 64, 65];
Current position: Research Engineer at Blablacar, France.
13. **Guilherme M. de Menezes** (2010 – 2013), UFMG, Brazil;
Supervision: 40% (jointly with Antonio F. Loureiro);
Thesis title: Data dissemination solutions for wireless ad hoc networks;
Goal: To answer the challenges of how to effectively distribute (1) monitored data in static wireless sensor networks such that data can be retrieved later by an entity that freely moves while traversing the network; and (2) report events to drivers who are inside a region of interest in highways or urban Vehicular Networks (VANETs);
Originality: (1) The proposal of replication structures responsible for the sensed data distribution through the network according to probabilistic decisions of forwarding and storage (cf. **Fiche 4 of Form 3** for more detail). (2) While most existing solutions solely focus on dense and connected scenarios, our dissemination solutions in VANETs seamlessly adapt to the perceived road traffic conditions to deliver messages to intended recipients, operating in connected and intermittently connected VANETs;
Publications: [49, 50, 51, 52, 53, 54, 57];
Award: The [50] paper was one of the top-five papers recommended to be published at a special issue of PEVA Elsevier journal [57];
Current position: Associate Professor at UFMG, Brazil.
14. **Ana C. B. K. Vendramin** (2009 – 2012), Technological Federal Univ. of Parana (UTFPR), Brazil;
Supervision: 30% (jointly with Anelise Munaretto and Myriam R. Delgado);
Thesis title: Routing protocols based on swarm intelligence for Delay Tolerant Networks;
Goal: To leverage the adaptive features of population-based paradigms (e.g., Ant Colony Optimization - ACO) in forwarding solutions for dealing with the dynamic and complex environment of Delay Tolerant Networks. (DTNs);
Originality: The 1st routing solutions that employs a complete Ant Colony Optimization search (guided by pheromone and heuristics function) and analyzes the most relevant information that can be gathered from DTN nodes;
Publications: [43, 99, 100, 101];
Current position: Associate Professor at UTFPR, Brazil.

15. **Niels Karowski** (2010 – 2011), TU-Berlin, Germany;
Supervision: 50% (in collaboration with Adam Wolisz);
Goal: Fast neighborhood passive discovery in constraint multi-radio beacon-enabled wireless environments;
Originality: 1st work to provide listening schedule solutions to the asynchronous and multi-channel passive discovery problem. Our solutions decrease the time to discover the first neighbor and reduce the average time compared to related approaches;
Publications: [37, 38].
16. **Mubashir H. Rehmani** (2009 – 2011), UPMC, France;
Supervision: 70% (jointly with Hicham Khalife and Serge Fdida);
Thesis title: Opportunistic data dissemination in multi-hop Cognitive Radio Ad-Hoc Networks; *Goal:* The design of a distributed channel selection strategy for robust data dissemination in multi-hop cognitive radio ad-hoc networks;
Originality: Proposed strategy allows to efficiently and reliably take channel selection decisions on-the-fly and to recover from bad channel selection decisions, by keeping track of previous wrong channel state prediction and accordingly adapting to future channel selection decision;
Publications: [74, 75, 76, 77, 78];
Current position: Assistant Lecturer at the Department of Computer Science, Cork Institute of Technology, Ireland.
17. **Joseph Rahmé** (2007 – 2010), Univ. Paris-Sud, France;
Supervision: 40% (jointly with Khaldoun Al Agha);
Thesis title: Constraints Modeling and Energy Management in Multi-Hop Wireless Network;
Goal: Lifetime extension of wireless sensor network functionalities by avoiding energy-compromised hotspots in the network;
Originality: Efficient combination of energy management mechanisms of sensors and load distribution over the network;
Publications: [71, 72];
Award: [71] was a top-rated papers recommended to be published at the Springer Annals of Telecommunication [72];
Current position: Project manager at Groupe Caisse des Dépôts.

Visiting PhD Interns (8): Students who, during their PhD studies at their home institutions, came to Inria for 4 to 6 months, payed by Inria.

1. **Adriano Di Luzio** (Jun. 2017 – 2018). Sapienza Univ. of Rome, Italy;
Goal: 2 goals: (1) Classification and extraction of personality traits from smartphone crowdsensed datasets; (2) how geo-indistinguishability affects utility in mobility-based geographic datasets
Originality: The establishment of (1) a link between personality (e.g., being sociable and highly mobile, appreciating a variety of content, etc) and technological (e.g., “where”, “how”, and “for what” she uses her phone) behaviors is a scientific discovery that will lead to wealth of design opportunities; (2) the impact to the utility of networking strategies (e.g., dissemination) of privacy measures when applied to geolocalized datasets is still unknown and not quantified. It is the goal of this study.
Publications: (1) [6] (under submission to a journal); (2) [21].
2. **Panagiota Katsikouli** (May 2016 – Sep. 2016). Univ. of Edinburgh, UK;
Supervision: 50% (jointly with Marco Fiore and Alberto Tarabe from CNR, Italy);
Goal: What frequency should one sample individual human movements so that they can be reconstructed from the collected samples with minimum loss of information?
Originality: To preserve the temporal dimension of movements and the time ordering of visits, while capturing transitions between frequent locations. Our quest for a response leads to the discovery of (i) seemingly universal information-theoretical properties of human mobility, and (ii) a linear scaling law of the localisation error with respect to the sampling frequency. Based on such knowledge discovery, we have designed an adaptive sampling approach that adapts according to the speed of movement of individuals. The approach was tested on 8 smartphones of volunteers; A journal is in preparation.
Publication: [39, 40]; **Patent:** We have also started with Inria the procedure to register a patent on the adaptive sampling approach, which we believe has a big potential on any application or service leveraging mobility;
Current position: Post-Doc fellow at DTU, Denmark.
3. **Thiago Silva** (Jun. 2013 – Sep. 2013) Federal Univ. of Minas Gerais (UFMG), Brazil;
Supervision: 50% (jointly with Antonio F. Loureiro and Pedro Olmo S. V. de Melo, UFMG, Brazil);
Goal: Characterization of properties of Waze application its broad and global spatial coverage as well as its limitations;
Novelty: 1st characterization of Waze from a crowdsensing point of view: we show it can be exploited for mapping the physical features of urban locations at a low cost, providing complementary data in relation to location or photo sharing system;
Publications: [86, 87];
Current position: Associate professor at Technological Federal Univ. of Paraná, Brazil.

4. **Kanchana Thilakarathna** (Apr. - Oct. 2012). NICTA & UNSW, Australia;
Supervision: 80% (jointly with Aruna Seneviratne and Henrik Petander, NICTA & UNSW, Australia);
Goal: Dissemination of delay tolerant content in intermittently connected wireless networks;
Novelty: The design of a hybrid time-aware method that (1) combines the advantages of distributed decentralized storage and opportunistic communications, (2) considers initial encounter time and duration of users' encounters (which we were the first to consider, to the best of our knowledge), and (3) allow users to share information/content only with the users who are previously identified as friends;
Publications: [90, 92, 93, 91];
Awards: Best Demo Award at IEEE iToF 2013 Demo and Poster Competition with the Yalut cloud service smartphone demo application (www.yalut.com) [33]. Best Thesis Award with "Malcolm Chaikin Prize" for Research Excellence in Engineering at UNSW for 2015;
Current position: Assistant professor at University of Sydney.
5. **Pedro Olmo S. Vaz de Melo** (Mar. 2011 – Jul. 2011). Federal Univ. of Minas Gerais (UFMG), Brazil;
Supervision: 40% (jointly with M. Fiore, CNR, K. Jaffrés-Runser, Univ. of Toulouse, and A. F. Loureiro, UFMG);
Goal: The design of a classifier of users' wireless interactions, able to clearly characterize random interactions and to identify social interactions (i.e., Friends, Acquaintances, Bridges nodes);
Novelty: First work to propose such finer grained classifier without imposing any geographical dependency, what gives it general validity;
Publications: [67, 96, 97];
Award: [97] was (1) top-three best paper award and (2) top-five selected paper recommended to be published at a special issue of PEVA Elsevier journal [67] (among 42 full papers);
Current position: Associate Prof. at UFMG, Brazil.
6. **Greg Bigwood** (Mar. 2009 – Aug. 2009). Univ. of St. Andrews, UK. Inria Grant;
Supervision: 80% (jointly with Marcelo Dias de Amorim); **Goal:** Centrality-based data collection strategies for wireless disconnected networks, leveraging inherent encounters of mobile phone users and transforming some of them into delegates for data collection;
Novelty: Selection of a subset of central devices to play the role of collectors in the network, while keeping their normal mobility behavior (no mobility-assisted or controlled-mobile special devices are used);
Publication: [3, 4];
Current position: Software Developer at Springer Nature.
7. **Massimo Vecchio** (Oct. 2008 – Feb. 2009), IMP Institute for Advanced Studies, Italy;
Supervision: 80% (jointly with Artur Ziviani, LNCC, Brazil, and Roy Friedman, Technion, Israel);
Goal: Design of a dissemination strategy allowing a mobile sink to effectively gather, with a low communication overhead, a representative view of a monitored region covered by n sensor nodes by visiting in an uncontrolled trajectory any x nodes, where $x \ll n$;
Novelty: 1st work to provide solution to this problem: our strategy combines a probabilistic flooding with a probabilistic storing scheme to uniformly distribute data among nodes in Wireless Sensor Networks (cf. **Fiche 4 of Form 3** for more details);
Publication: [98];
Current position: Associate Prof. at Univ. degli Studi eCampus, Italy.
8. **Antonis Papadimitriou** (Mar. 2008 – Jul. 2008), National & Kapodistrian University of Athens, Greece;
Supervision: 40% (jointly with Fabrice Le Fessant, Inria, and Cigdem Sengul Post-Doc Inria);
Goal: Investigating the impact of selective forwarding attacks on tree-based routing topologies in Wireless Sensor Networks (WSNs);
Originality: Provision of continuous operation (or graceful degradation) of WSNs by improving resilience against, rather than detection of (focus of related works), these attacks: important property in environments where human intervention is difficult;
Publication: [29, 69, 70];
Current position: Security researcher at Intel Labs.

M.Sc. Intern (3):

1. **Loic Jordan** (Feb. 2020-Jul. 2020); Sorbonne Université – UPMC and ENS Lyon (ENS salary);
Supervision: 50% (jointly with Marcelo Dias de Amorim (LIP6/CNRS));
Topic: "Sniffing with Raspberry Pi";
Goal: How to measure multi-technology wireless activity in a target area? This subject is related to the ANR MITIK project, started in Feb. 2020, where passive sniffing of Wi-Fi and Bluetooth devices in a geographical zone will be performed and used for trajectory reconstruction and contact inference, after fully anonymization.
2. **Felipe Fonseca** (Nov 2019-Jan. 2020, on-going); Federal Univ. of Goiás (UFG), Brazil (Inria funding);
Supervision: 30% (jointly with Kleber V. Cardoso and Sand Correa, UFG);

Topic: “Personalized travel itineraries in edge computing touristic services”;

Goal: The design of a multi-user travel itinerary planning framework that considers both individual trip itinerary (e.g., preferences, time or cost) and touristic service constraints (e.g., nearby edge cloud resources and application requirements).

Originality: Recommendation algorithms for touristic services should also consider which service applications the visitor will consume in the places visited and how the content of such applications will be delivered to him given the available 5G infrastructure. To the best of our knowledge, no previous work have tackled the problem of recommending personalized itineraries for tourists in the 5G context.

Publication: [30]. One journal and another conference paper are in preparation.

3. **Diego Madriaga** (Sep-Nov 2018, currently a co-supervised PhD); NIC Lab/University of Chile (Inria funding);
Supervision: 70% (jointly with Marco Fiore, CNR, Italy, and Panagiota Katsikouli, Post-Doc AGORA Inria);
Topic: “Adaptive mobility sampling: Real implementation and performance evaluation”;
Goal: To implement as an Android application, our adaptive mobility sampling approach, started during the PhD internship of P. Katsikouli (here above described);
Originality: No equivalent approach exists in the literature. Our approach captures trajectory of individuals with their temporal specificities in a limited frequency of sampling. The sampling frequency is adapted to the stationarity level of users;
Publication: One journal paper is in preparation.
Patent: Started at Inria: it has a big potential on any application or service leveraging mobility.

Under-graduation Research Program:

1. **Marouane Jaakik** (Oct. 2019–Sep. 2021); CentralSupélec (double diplôme with EPFL);
Supervision: 50% (jointly with Nadjib Achir);
Topic: “How can Vehicles increase Cloud intelligence?”;
Goal: First, to evaluate the costs mobility of wireless devices causes in cloud computing infrastructures. Second, to build cloud-computing facilities on top of vehicles and take profit of their computing power to excute tasks of the crowd in their neighborhood. T *Originality:* Mobility is not considered in cloud computing solutions. Besides, to the best of our knowledge, no current solution leverage vehicles as cloud computing facilities.

6) Responsabilités collectives / Responsibilities

Commissions and Committees:

- At Inria:
 - (since Sep. 2017) **Member of Bureau du CEP** (BCEP at Inria Saclay).
 - (Oct. 2017 - Dec. 2019) **President of “Commission Scientifique (CS)”** at Inria Saclay. Commission in charge of the ranking of candidates applying for a PhD scholarship, a Post-Doc fellowship, and “délégation” at Inria Saclay.
 - (since Dec. 2018) **Co-Coordinator of the mentoring program** at Inria Saclay.
 - (Feb. 2017 - Apr. 2019) Member of “Comité Parité/Égalité” (GT-profil internationaux) of Inria.
 - (Feb. 2017 - Dec. 2018) Member of “Comité Parité/Égalité” (GT-recrutement) of Inria.
 - (Apr. 2018) Member of “Comité d’arbitrage des détachements pour 2018”.
 - (since Jan. 2014) Member of “Commission Scientifique (CS) de Inria Saclay”.
 - (since Oct. 2013) Member of “Comité de Centre (CC)” of Inria Saclay (Collège A). Committee promoting the communication and transmission of information within the center to debate collective questions about the center and the professional life of the staff.
- At the regional eco-system:
 - (Jan. 2015 - Sep. 2019) Nominated member of “Pôle 2: Réseaux, information et communications” by the direction committee of Doctoral School STIC Paris Saclay (ED STIC of Univ. Paris Saclay). Committee responsible for the audition and ranking of candidates applying for a PhD scholarship at Pôle 2.
 - (2016) Member of the “STIC Doctoral School Best Scientific Contribution Award” committee.
 - (2014-2015) Member of the working group named “The researcher career in 2030” of *Reseaux Prosper* (<http://www.reseau-prosper.org>, which regroups responsible for the strategy and the prospective of public research institutions in France). I was invited by Claude Kirchner to represent Inria (jointly with Julien Mairal) at that WG, which resulted in 6 meeting in Paris and a final report describing the prospective vision of possible futures for a researcher career in France.

- Other committees:

- (2019) Member of “Comité de sélection pour les recrutements d’un MdC à l’IUT, “Université Paris-Sud”.
- (2019) Member of “Comité de sélection pour les recrutements d’un MdC à “Université de Technologie de Compiègne”.
- (2018) Selected member by ACM-W to attend (with funding) the Grad Cohort program event (<https://cra.org/cra-w/events/grad-cohort-women-2018/>) in San Francisco (Apr. 2018) and represent the mentor community of women from Europe. Grad Cohort is an event of CRA-W (Computing Research Association Committee on Women).
- (2017) Member of “Comité de sélection pour les recrutements d’un MdC (27ème section) sur le département télécom et le laboratoire CITI de l’INSA de Lyon”.
- (2015) Member of “Comité de sélection pour les recrutements d’un MdC à l’IUT, “Université Paris-Sud”.
- (2011) Member of the XXIV Best PhD and M.Sc.Thesis Award of the Brazilian Computing Society (SBC) - CTD 2011.

Reviewer for the European Commission:

- (Apr. 2019) Remote evaluator of the ERC’s Starting Grant 2019.
- (Feb.-Jun. 2013): Remote evaluator of FET Open "Xtrack" proposals.
- (Jan. 2011 - Jan. 2013): Remote evaluation of short proposals for the FET-Open program.
- (Jan. 2011): Rapporteur, Shadow and Challenger at the Panel evaluation of Grant proposals for the EC "Future and Emerging Technologies" program (EC FET-Open), in Brussels.

Editorial boards:

- (since Jul. 2019) **Editorial Board member** of *Ad Hoc Networks Elsevier Journal*.
- (since Feb. 2018) **Editorial Board member** of *Urban Computing Spring book series* (<http://www.springer.com/series/15552>).
- (since May 2014) **Area editor** of *ACM SIGCOMM Computer Communication Review – ACM CCR*.
- (Jun. 2016 - Sep. 2019) **Editorial Board member** of *Wireless Communications and Mobile Computing*, an Open Access Journal of John Wiley & Sons and Hindawi.

Organizing committee member (26):

- **General/TPC co-chair:** ACM MobiWac 2020 workshop, jointly with ACM MobiCom 2020; Workshop on Big Social Data and Urban Computing (BIDU) jointly with VLDB 2019; Workshop on Urban Computing 2019 (UrbCom) jointly with DCOSS 2019; Algotel 2017 (conférence francophone sur les aspects algorithmiques appliquée aux problèmes des télécommunications); ACM CoNEXT 2013 Student Workshop; ACM HotPlanet 2012, jointly with ACM MobiSys 2012.
- **TPC co-chair:** Symposium on Selected Topics in Communications at IEEE/CIC ICC 2015.
- **Shadow TPC co-chair:** Shadow Cores & Algotel 2020 GDR Rescom (French), together with L. Theoleyre (CNRS) and A. Araldo (TSP); Shadow ACM Conext 2011, together with O. Bonaventure and C. Pelsser. Both shadow TPCs aim at providing an educational experience for young PhD graduates, post docs, and junior researchers by simulating a TPC meeting entitled to discuss some papers submitted to the related conferences.
- **Publicity co-chair:** [EWSN 2020](#); IEEE DCOSS 2019 and 2018; IEEE PICOM 2018; [IEEE SECON 2015 and 2012](#); [ACM MobiCom 2014](#); IEEE MASS 2010.
- **Student Travel Grant co-chair:** [IEEE Infocom 2019](#); IEEE MiSeNet 2018 Workshop jointly with IEEE Infocom 2018; ACM SIGMOBILE N2Women 2014 Workshop; ExtremeCom 2012 (in co-operation with ACM/SIGCOMM and SBC); ExtremeCom 2011; MOBILITY 2011.
- **Publication co-chair:** [ACM MobiCom 2015](#); EAI AdHocNets 2011.
- **Workshop co-chair:** [IEEE SECON 2014](#).
- **Demo chair:** [IEEE SECON 2013](#).
- **Local Arrangement co-chair:** ExtremeCom 2011.

Program committee member (39):

- **Conferences (21):** Member of Poster and Demo committee of [ACM SIGCOMM 2015](#); [IEEE SECON 2015 and 2012](#); [IEEE LCN 2008](#); IEEE ICC 2016; IEEE WiMob 2014; IEEE MASS 2010; IEEE PIMRC 2009, 2008 and 2007; IFIP NTMS 2018, 2016 and 2015; IEEE AINA 2017; IEEE IFIP Wireless Days 2014; MOBILITY 2011; IEEE WOCN 2011; WiCON 2010; AUTONOMICS 2009; ACM CoNEXT Student Workshop 2008; IEEE IFIP Wireless Days 2014; MOBILITY 2011; IEEE WOCN 2011; WiCON 2010; AUTONOMICS 2009; ACM CoNEXT Student Workshop 2008.
- **Workshops (10):** ACM HotPlanet 2013; Med-Hoc-Net 2013; WPerformance 2011; CARI 2010; BWNCP 2009; WGRS 2009 and 2008; IMAGINE 2008 and 2007; ACM CoNEXT 2007's Shadow TPC Member.
- **National events (8):** Algotel 2020, 019, 2018, 2014, and 2009; SBRC Urban Computing (COURB) workshop 2018 and 2017; JDIR 2009 (Journées doctorales d'Informatique et réseaux); SBRC 2014 (Brazilian Symposium).

Reviewer activities:

- **Regular reviewer of several international journals:** ACM Sigcomm CCR; IEEE Trans. on Computers (TC); IEEE Trans. on Mobile Computing (TMC); IEEE Trans. on Parallel and Distributed Systems (TPDS); IEEE Trans. on Industrial Informatics (TII); IEEE Trans. on Vehicular Networks (TVC); IEEE Internet Computing; IEEE Wireless Communications Magazine; IEEE Communications Letters; IEEE Internet Computing; Ad Hoc Networks Elsevier; Computer Networks Elsevier; Computer Communications Elsevier; Pervasive Mobile Computing (PMC) Elsevier; Sustainable Computing and Informatics and Systems (SUSCOM) Elsevier.
- Author of several reference letters for candidates applying to various positions in Computer Science.

PhD thesis committee member (35):

- **Reviewer (Committees abroad are indicated with ★):**
 1. R. Teles, *Standard Improvements and Predictable Performance for Industrial Internet of Things in Indoor Deployments* (Univ. of Strasbourg, Nov. 2019).
 2. H. Chelle, *Contrôle de charge des réseaux IoT: D'une étude théorique à une implantation réelle* (INP/Univ. de Toulouse, Dec. 2018).
 3. Y. Zhou, *Clustering Nature of Base Stations and Traffic Demands in Cellular Networks and the Corresponding Caching and Multicast Strategies* (CentraleSupélec, Jul. 2018).
 4. F. Coriat, *Géolocalisation et communication en situation de crise* (UPMC, Dec. 2018).
 5. W. Shuai, *Management of electric vehicle systems with self-interested actors* (Telecom Bretagne, Sep. 2016).
 6. F. Rebecchi, *Device-to-Device data offloading: from model to implementation* (UPMC/Thales, Sep. 2015).
 7. (★) N. R. Zema, *Spontaneous mobility and autonomours (Re)configuration techniques to support next generation networks* (Univ. of Reggio Calabria, Itgaly, Apr. 2015).
 8. (★) F. Aguiar Silva, *Content Delivery in Vehicular Ad Hoc Networks* (Federal Univ. of Minas Gerais, Brazil, Dec. 2014).
 9. R. Hu, *Algorithmes de dissémination épidémiques dans les réseaux a grande échelle : comparaison et adaptations aux topologies* (UPMC, Dec. 2013).
 10. T. Ducrocq *Auto-organisation des réseaux sans-fil multi-sauts dans les villes intelligentes* (Univ. des Sciences et Technologies de Lille, Nov. 2013).
 11. R. Hu, *Algorithmes de dissémination épidémiques dans les réseaux a grande échelle : comparaison et adaptations aux topologies* (UPMC, Dec. 2013).
 12. I. Amadou, *Routing protocols without neighbourhood knowledge for multi-hop wireless networks* (INSA Lyon, Sep. 2012).
 13. (★) N. Piroso, *Wireless Ad-Hoc Networks: from Sensing to Socializing* (Sapienza Univ. of Rome, Italy, Nov. 2011).
 14. (★) M. Vecchio, *Novel approaches to in-network processing for reducing power consumption in wireless sensor networks* (IMT Institute for Advanced Studies, Italy, Apr. 2009).
- **Examiner (Committees abroad are indicated with ★):**
 1. (★) V. San Ha Huynh, *Opportunistic networks and content sharing/caching (to be defined)* (Univ. of Nottingham, UK, Dec 2019).
 2. C. Bertier, *Quantification in device-to-device networks : from link estimation to graph utility* (Thales/Sorbonne Univ., Jan. 2020).
 3. J. Levy Abitbol, *Computational observations of socio-economic inequalities* (ENS Lyon/DANTE, Jan. 2020).
 4. H. Mazouzi, *Algorithms for Tasks Offloading on Multiple Mobile Edge Servers* (Univ. Paris 13, Nov. 2019).
 5. J. Loudet, *Distributed and Privacy-Preserving Personal Queries on Personal Clouds* (Univ. de Versailles, Oct. 2019).
 6. J. Muñoz, *km-scale Industrial Networking* (Sorbonne Univ., Mar. 2019).

7. A. Boubrima, *Deployment and Scheduling of Wireless Sensor Networks for Air Pollution Monitoring* (INSA-Lyon/AGORA, Mar. 2019).
8. (★) L. Pajević, *Performance Analysis of Opportunistic Content Spreading via Data-driven Mobility Modeling* (KTH, Sweden, Nov. 2018).
9. S. Eddine Belouanas, *Dissemination de contenus populaires et tolérants au délai dans les réseaux cellulaires* (UPMC, Sep. 2017).
10. A. Ellouze, *Mobile applications offloading in mobile Cloud environment* (Telecom ParisTech, Mar. 2017).
11. (★) P. M. Salgueiro dos Santos, *Wireless protocols and channel estimation for data gathering with mobile nodes* (Univ. of Porto, Portugal, 2017).
12. M. Rekik, *Protocols for Smart Grids* (Univ. de Lille, Jul. 2016).
13. O. Iova, *Algorithms and Protocols for all-IP Wireless Sensor Networks in the Internet of Things* (Univ. de Strasbourg, Dec. 2014).
14. T. Phe-Neau, *Properties and impact of vicinity in mobile opportunistic networks* (UPMC, Jan. 2014).
15. (★) J. Batista Pinto Neto, *Um Modelo para Previsão do Volume de Contato em Redes Tolerantes a Atrasos e Desconexões: Uma Abordagem Quantitativa* (Federal Univ. of Amazonas, Brazil, Sep. 2011).
16. F. Khadar, *Contrôle de topologie dans les réseaux de capteurs : de la théorie à la pratique* (Univ. Lille 1, Dec. 2009).
17. P. B. Velloso, *A human-based trust model for ad hoc networks* (Committee head, UPMC, Jul. 2008).

• **Invited:**

1. Tanel Razafimandimby *Toward Internet of Heterogeneous Things: Wireless communication maintenance and efficient data sharing among devices* (Univ. of Lille 1, Oct. 2017).
2. Thiago H. Silva, *Large scale study of city dynamics and urban social behavior using participatory sensor networks* (UFMG, Brazil, May 2014).
3. Ana Cristina B. K. Vendramin, *Cultural GrAnt: A routing protocol based on swarm intelligence for Delay Tolerant Networks* (UTFPR, Brazil, Jun. 2012).

PhD Mid-term examiner (9 committees): J. Kamal, *Détection d'anomalies comportementales pour les systèmes de transport intelligents et coopératifs*, (TPT, Apr. 2019); Y. Du, *In-network Collaborative Mobile Crowdsensing: A Context-Aware Sensing Group Framework* (Sorbonne Univ./MiMove, Mar. 2019); M. Sardara, *Large scale video delivery over Information Centric Networking*, (Cisco/TPT, Jun. 2018); M. Charfi, *Networking Functions for Smart Cities*, (Centrale-Supélec, Jun. 2018); I. D. Adamou, *Data Collection Networks for White Areas*, (CentraleSupélec, Jun. 2018); C. Bertier, *Importance relative des noeuds dans l'espace dans les graphes de contacts*, (Thales/UPMC, Avr. 2018); T. Duc Ha, *Allocation de ressources et association utilisateur/cellule optimisées pour les réseaux C-RAN* (Univ. Paris Sud, 2017); S. Eddine Belouanas, *Data Dissemination under heavy cellular constraints* (UPMC, Jun. 2015); T. Lucia Monteiro, *Algoritmos Distribuidos para Alocação de Canais em Redes Sem Fio* (PUC-PR, Brazil, Dec. 2010).

M.Sc. thesis committee examiner (5 committees): W. Z. Xavier, (PUC-MG, Minas Gerais, March 2019); B. Farias Fausto (Federal Univ. of Rio de Janeiro State, Oct. 2017); F. Silva Moraes (Federal Univ. of Goiás, Brazil, Nov. 2016); J. J. M. Diaz (Federal Univ. of Minas Gerais, Brazil. Mar. 2015); D. F. Borges de Oliveira (PUC-PR, Brazil. Dec. 2010).

7) Management (le cas échéant) / Management (if applicable)

Research team:

- (since Jan. 2019) **Head of TRiBE** (ex-INFINE-POST) which stands for *inTeRnet BEyond the usual*: (1) presented at B CEP and CEP of Saclay in Nov and in Dec. 2018, respectively; (2) got the GO of the DGD-S on 22nd Jan. 2019; (3) had its long-version proposal and answers to the DGD-S comments submitted to the GT on 23th Jan. 2019; (4) answers to GT's comments were presented at the CEP on 26th March 2019; (5) **officially created as "équipe projet" since 1st June. 2019** TRiBE (1) belongs to the Inria theme "Networks and Telecommunications, (2) contributes to the "Challenge no 11: Toward a trustworthy Internet of Everything" of the strategic plan of Inria, and (3) aims to contribute to the design of smart, unified, and tactful Internet edge networks. **Team:** 5 researchers (3 from Inria and 1 from Univ. Paris 13 in "délégation" until Aug. 2021), 1 research engineer, 8 PhD students, 2 Brazilian researchers in 1-year sabbatical (from Feb. 2020), 4 interns.
- (since Feb. 2018) **Head of INFINE-POST** (ex-INFINE). **Team:** 3 Inria CRCN researchers, 1 Post-Doc, 1 research engineer, 5 PhD students, 3 PhD interns, 1 visiting researcher.
- (2014-2017) **Vice-head of INFINE**. I was responsible for (1) the first compilation/editing of the team long proposal after the reception of reviewers comments and feedback of my team colleagues; (2) the writing of the first version of the Inria RaWeb report of the team (in 2014) and the version of 2017; (3) the team meeting's schedule and organization with technical presentations; (4) the participation to the CEP at Inria Saclay and its report to the team.

- (2017-2019) **Coordinator of the international Inria EMBRACE associated team**, which is the outcome of a long-term collaboration with three Brazilian institutions. **Team:** 10 researchers, 7 students.

Research projects:

- **As coordinator:**

1. **ANR MITIK** (2020-2023, PRC/CE25, [acceptation rate of 15,7%](https://project.inria.fr/mitik/), i.e. 41,7% at the 1st submission phase and 38,2% at 2nd submission phase): *Mobility and contact traces from non-intrusive passive measurements* (<https://project.inria.fr/mitik/>). *Partners:* COMETE/Inria, Univ. de la Rochelle, Sorbonne Univ.. *Inria amount:* 238,403.63 EUR. *Total amount:* 594,052.71 EUR.
2. **EMBRACE associated team of Inria** (2017-2019, Inria-FAPs in Brazil): *Leveraging human behavior and uncertainty in 5G networks to build robust resource allocation and services orchestration models* (<https://team.inria.fr/infine/embrace/>). *Partners:* Federal Univ. of Minas Gerais (UFMG), Federal Univ. of Goias (UFG), Technological Federal Univ. of Parana (UTFPR). *Inria amount:* 30,000 EUR. *Total amount:* 90,000 EUR.
3. **EU CHIST-ERA MACACO** (2013-2017, 3 out of 15 projects were selected): *Mobile context-adaptive caching for content-centric networking* (<https://macaco.inria.fr/>). *Partners:* Univ. of College London (UK), SUPSI (Switzerland), Univ. of Toulouse, Inria, CNR (Italy), UFMG (Brazil). *INRIA amount:* 812,449.52 EUR. *Total amount:* 1,718,183.25 EUR.
4. **PHC-PESSOA** (2015-2017). *Routine-based enhanced connectivity under user mobility*. *Partner:* Univ. of Coimbra, Portugal. *Inria amount:* 5,560 EUR.
5. **STIC-AmSud UCOOL** (2014-2016): *Understanding and predicting human demanded content and mobility* (<https://team.inria.fr/dante/stic-amsud-ucool-project-accepted/>). *Partners:* Univ. of Santa Maria (Chile), Univ. of Buenos Aires (Argentina), Inria, Telecom SudParis, UTFPR (Brazil), PUC-PR (Brazil), LNCC (Brazil), GranData (Argentina). *Inria amount:* 18,000 EUR. *Total amount:* 68,600 EUR.
6. **Under-submission ERC CoG PYTHIA** (Feb. 2020): *Motion Intelligence toward energy-efficient resource provisioning in the Internet*. *Goal* To develop the theoretical foundations, the analytical methods, and the algorithm tools required to yield an accurate mobility anticipation of smart devices enhanced with contextual information impacting motion decisions of their users. *Group:* 3 researchers, one early-career researcher, one research engineer, two Post-Docs, 6 PhDs. *Total amount:* 1,914,172 EUR.
Remarks: Tutored by Thierry Priol, the writing of this project was a very rich experience, which made me improve as a researcher and better define the goals in my career.

- **As partner:** (★ indicates participation as work package leader)

1. (★) **STIC-AmSud MOTIF** (2017-2019). *Mobile phone sensing of human dynamics in techno-social environment* (<https://team.inria.fr/dante/stic-amsud-motif>). *Partners:* Univ. of Buenos Aires (Argentina), Inria and ENS-Lyon (France), LNCC (Brazil), UFMG (Brazil), PUC-MG (Brazil), GranData (Argentina). *Inria amount:* 9,000 EUR (1st year). *Total amount:* 33,000 EUR (1st year).
2. (★) **STIC-Asie URSA** (2012-2014). *URban Sensing for Ads Networks* (<http://sns.i2r.a-star.edu.sg/?portfolio-type=ursa>). *Partners:* Telecom SudParis, Fu Jen Catholic Univ., Institute for Infocomm Research, Institut de la Francophonie pour l'Informatique. *Inria amount:* 9,000 EUR. *Total amount:* 60,000 EUR.
3. **ANR VERSO SHAMAN** (2009-2012). *Self-organizing and healing architectures for malicious and adversarial network*. (<https://www-npa.lip6.fr/shaman/wiki/pmwiki.php>). *Partners:* UPMC, Inria, Univ. Sud-Paris, Univ. Paris 7, Orange Labs, Ecole Polytechnique, EPFL, Kent State Univ., Univ. of Toronto, Canada. *ASAP/Inria amount:* 134,000 EUR.
4. (★) **PICOM ICOM** (2008-2010). *Infrastructure pour le COMmerce du futur*. (<https://raweb.inria.fr/rapportsactivite/RA2010/pops/uid56.html>) *Partners:* Declathon, La redoute, Orange, Arismore, France Telecom, La Poste, Auchan, GS1, Atos Origin, Inria (ASAP, POPS). *ASAP/Inria amount:* 125,285 EUR. *Total amount:* 2,142,680.91 EUR.
5. **Digitelabs Quality of Service in wireless network** (2007-2009). *Partner:* University Paris Sud. *ASAP/Inria amount:* 52,200 EUR.
6. **ANR RRRT SVP** (2006-2008). *Architecture ambiente pour la surveillance et la prevention* (<http://surveiller-prevenir.irisa.fr/>). *Partners:* CEA, ANACT, APHYCARE, Inria (ARES, PARIS, POPS, R2D2), UPMC, Univ. Rennes 2, Thales.

8) Collaborations, mobilité / *Collaborations, mobility*

Geographical mobility:

- Regular visits to TU-Berlin (2 weeks a month) during 2010-2011.
- One-year sabbatical at TKN team of TU-Berlin (Germany), during 2009-2010
- Short-visits: one-month at PUC-PR (Brazil) in 2010; two-weeks at Univ. of Waterloo (Canada) and at LNCC (Brazil) both in 2009.
- One-year Post-Doctoral at PARIS team of Inria Rennes, during 2005-2006.
- Arrival at LIP6/UPMC (France) for the doctoral studies in 2002.

↔ Since 2012, I have been only at INRIA Saclay. My mobility is limited, for the time being, by the fact that I have two very young children. I have however hosted many international visitors during this period:

- *European visitors:* Julinda Stefa (Sapienza Univ. of Rome, 3 months, 2017), Alessandro Mei (Sapienza Univ. of Rome, 3 days visit, 2017), Rik Sarkar (Univ. of Edingburgh, 3 days visit, 2017), Ana Aguiar (Univ. of Porto, several few days visits, 2017 and in 2018), Marco Fiore (CRN, several few days visits in 2017 and in 2018).
- *Non-European visitors:* Sand L. Correa (Unirio, 1-year, 2020), Kleber V. Cardoso (Unirio, 1-year, 2020), Mark Crovella (Boston Univ., Jan. 2019), Antonio F. Loureiro (UFMG, 3 months, 2018-2019), Artur Ziviani (LNCC, 5 months, 2008), Anelise Munaretto (UTFPR, 2 months, 2009 and 1 year, 2012-2013), Mauro Fonseca (PUC-PR, 1 year, 2012-2013), and Roy Friedman (Technion, 22nd Sep. 2016).

Thematical mobility:

- Adaptive services for wireless self-organizing networks (2002–2009) → Random Linear Network Coding in Wireless Networks (2008–2009) → Protocols and services for mobile and intermittently connected networks (2007–2014) → Characterization and analysis of human behavior (2014–now).

International Visibility:

- Nominated in 2016 as one of the “10 women in networking/communications that you should WATCH” by Networking Networking Women (N2Women) community an ACM SIGMOBILE program.
- 17 international collaborations in 8 different countries (5 past and 12 on-going: USA, Portugal, Italy, Spain, UK, Brazil, Australia, Israel).
- Committee member of 7 international PhD thesis, in 5 different countries (Italy, Sweden, UK, Portugal, Brazil).
- Regular invitations to participate in the organizing committees of top-notch international conferences and workshops (e.g., ACM MobiCom, IEEE Infocom, IEEE SECON, ACM Conext), EWSN.
- Invited to be a keynote by international workshops and school organisers in 5 different countries (China, Brazil, Germany, UK, Uruguay, Portugal, Brazil).
- Invited to give talks in several international universities (China, UK, Italy, Germany, Portugal, Chile, Brazil).
- Member of four editorial boards: ACM Sigcomm Computer Communication review (CCR), Elsevier Ad Hoc Networks, Urban Computing Spring book series, and Wireless Communications and Mobile Computing from John Wiley & Sons and Hindawi.

Collaborations:

Hereafter, I list my main scientific collaborations, beside the PhD students, interns, and Post-Doc fellows. The publication list with all collaborators can be also found in DBLP⁴.

• National (on-going):

1. **Alain Tchana** (ENS Lyon) since Nov. 2019, on the detection of bypass frauds in cellular network datasets. *Involved PhD student:* Anne Josiane Kouam Djuigne.
2. **Nadjib Achir** (Univ. Paris 13) since Sep. 2019, on the data and computing offloading when considering real conditions imposed by mobility of smart devices. *Involved student:* Marouane Jaakik (joint under-graduation at CentralSupelec and at EPFL).
3. **Catuscia Palamidessi** (Inria Saclay), since 2018, on the investigation of privacy versus utility trade-off of protocols and services leveraging human mobility knowledge [21]. *Involved PhD student:* Adriano Di Luzio.
4. **Marcelo Dias de Amorim** (CNRS/LIP6), since 2002, (1) on zone coverage in wireless sensor networks, (2) on opportunistic data offloading strategies in delay-tolerant challenged networks, and (3) on mobility pattern investigation of mobile users. *Outcomes:* 12 common publications; *Involved PhD student:* Greg Bigwood, Marco V. Barbera; *Involved M.S. student:* Loic Jordan.

⁴http://dblp.uni-trier.de/pers/hd/v/Viana:Aline_Carneiro

5. **Katia Jaffrès-Runser**, since 2014, (1) on the under submission (1st phase) ANR GORILLAS proposal, on geo-distributed privacy-preserving intelligent orchestration of data-hungry services. (2) on the classification of wireless interactions of mobile users, (3) on the design of the MACACOApp application⁵, (4) on the classification and extraction of personality traits from smartphone crowdsensed datasets. MACACOApp is being used by users in Brazil and different countries in Europe. She is also authors of the [97] paper, one of three candidates for the best paper award and published at PEVA Elsevier journal. *Involved PhD student*: P. O. S. Vaz de Melo, and Adriano Di Luzio.

- **International** (on-going):

1. **Mark Crovella** (Boston University, USA, since May 2019) on the investigation of exploration patterns on human mobility. *Outcomes*: 1 workshop paper [1]. A paper is under submission at UbiComp 2020 and a tutorial journal is under preparation.
Involved PhD students: L. Amichi.
2. **Carlos Sarraute** (GranData company⁶, USA, since 2014) (1) on human mobility modeling, (2) on per-user network traffic profiling, (3) on the predictability of mobile data traffic consumption, and (4) on temporal completion of users' trajectories. Such works have involved two PhD thesis: E. Muccelli and G. Chen;
Outcomes: 6 common publications and 1 under-submission paper journal;
Involved students: E. Muccelli, G. Chen, D. Teixeira, D. do Couto Teixeira, and Haron C. Fanteceli.
3. **Marco Fiore** (IMDEA, Madrid, since 2011) (1) on the classification of wireless interactions of mobile users, (2) on the spatio-temporal traffic demand prediction of mobile users, (3) on the temporal completion and reconstruction of users' trajectories, (4) on the adaptive mobility sampling of individuals. Paper [97] was one of three candidates for the best paper award and selected to be submitted to a special issue of PEVA Elsevier journal, which got accepted. The collaboration and some outcomes involves the PhD thesis of G. Chen as well the work with P. Katsikouli and D. Madriaga;
Outcomes: 8 common publications; 1 Best Post Award at NetMob 2019.
Involved students: (PhD) P. O. S. Vaz de Melo, G. Chen, P. Katsikouli; (M.Sc.) D. Madriaga.
4. **Julinda Stefa** (Sapienza Univ. of Rome, Italy, since 2011) (1) on social-based opportunistic data offloading strategies in delay-tolerant challenged networks and (2) on the classification and extraction of personality traits from smartphone crowdsensed datasets;
Outcomes: 3 common publications and 1 under-submission ACM Trans. Data Science paper (major revision); Work was part of the PhD thesis of Marco Valerio Barbera and of the on-going thesis of Adriano Di Luzio;
Involved PhD students: M. Valerio Barbera and A. Di Luzio.
5. **Alessandro Mei** (Sapienza Univ. of Rome, Italy, since 2018) on classification and extraction of personality traits from smartphone crowdsensed datasets. Outcomes constitute part of the PhD thesis of Adriano Di Luzio;
Outcomes: 1 under-submission ACM Trans. Data Science paper (major revision);
Involved PhD student: Adriano Di Luzio.
6. **Ana Aguiar** (Univ. of Porto, Portugal, since 2016) on the design of a device-centric decision strategy for future data offloading from mobile crowdsensed datasets of passive WiFi scans. We expect to enhance mobile devices with the capability of locally and efficiently take (i.e., where and when) future offloading decisions to WiFi infrastructure;
Outcomes: 1 common publication [47]; 1 under-submission IEEE WoWMoM 2020 paper.
Involved PhD student: Emanuel Lima.
7. **Antonio F. Loureiro** (Federal Univ. of Minas Gerais – UFMG, Brazil, since 2010) (1) on a proactive data distribution protocol in wireless sensor networks with free-mobile sink nodes, (2) on scenario-adaptive dissemination protocol for Vehicular Networks, (3) on mobile social participatory sensing networks, (4) social attributes extraction in Vehicular Networks, (5) on “what can a mobility trace tell us?”, (6) on deciphering human patterns of motion, (7) on the investigation of exploration patterns on human mobility. The collaboration and outcomes involve(d) several PhD thesis;
Outcomes: 18 common publications; among them the publication in 2019 of a tutorial in a journal of very high impact ACM Computing Surveys (impact factor: 8.82 in 2015). He was also a partner of the EU CHIST-ERA MACACO project and is the Brazilian-side coordinator of the EMBRACE associated team;
Involved PhD students: P. O. M. Vaz de Melo, G. Maia de Menezes, T. da Silva, F. Domingos da Cunha, and J. Batista Borges.
8. **Artur Ziviani** (National Laboratory for Scientific Computing – LNCC, Brazil, since 2008) (1) on an proactive data distribution protocol in wireless sensor networks with free-mobile sink nodes, (2) on adaptive service requirements in wireless self-organizing networks, (3) on forwarding strategies for data offloading through Device-to-Device (D2D) communication, and (4) on the characterization of homophile in call detail records;

⁵<https://macaco.inria.fr/macacoapp/>

⁶www.grandata.com

Outcomes: 5 common publications; among them the publication of a survey in a journal of very high impact ACM Computing Surveys (impact factor: 15.88 in 2011), 1 tutorial (4h) at the SBRC 2018 conference. He was the Brazilian-side coordinator at STIC AmSud UCOOL project and is a partner of STIC AmSud Motif.

Involved students: Rafael L. Costa and Haron C. Fanteceli.

9. **Jussara Almeida** (Federal Univ. of Minas Gerais – UFMG, Brazil, since Nov. 2018) on the context-enhanced human predictability in short-term datasets with high spatial resolution. It is a recent started collaboration and involves the PhD student. She is the Brazilian-side coordinator of STIC AmSud MOTIf project;
Outcomes: 1 conference paper indicated as top-six best paper award candidate at ACM SIGSPATIAL 2019 [88]. 1 paper journal under preparation. *Involved PhD student:* Douglas Teixeira.
10. **Leobino Sampaio** (Federal Univ. of Bahia – UFBA, Brazil, since Jun. 2018) on the design of forwarding strategies leveraging mobility behavior of users, resource capability of devices as well as collaboration interests of users for data offloading through Device-to-Device (D2D) communication;
Outcomes: 1 tutorial (4h lessons, published as a book chapter) at the SBRC 2018 conference; 1 journal paper in submission.
Involved PhD student: Rafael L. Costa.
11. **Pedro Olmo Vaz de Melo** (Federal Univ. of Minas Gerais – UFMG, Brazil, since Feb. 2018) on the investigation of causalities in habits of human visits [79]. He was also the Brazilian-side coordinator of the EU CHIST-ERA MACACO project and is a member of EMBRACE associated team;
Outcomes: 5 common publications;
Involved PhD student: Lucas Santos and Thiago H. Silva.
12. **Kleber Vieira Cardoso** (Federal Univ. of Goiás – UFG, Brazil, since Nov. 2017) on the leveraging of human behavior at the design of user-aware optimization models for resource allocation in 5G wireless networks. He is partner of the EMBRACE associated team and will spend one sabbatical year in our team from summer 2019;
Outcomes: 1 conference paper [30], 1 journal paper under preparation.
Involved PhD student: Felipe Fonseca.

• Past collaborations:

1. **Ivaylo Petev** (CREST/CNRS), 2018, (1) on investigation on the effects that the diffusion and use of smartphone devices have on the segregation of human interaction, (2) on enhancing prediction by incorporating such knowledge in models to predict individual interaction behaviors, (3) to guide intervention to identify specific contexts and social profiles where intervention can foster diversity in human interaction.
Involved PhD student: (M.Sc.) Haron C. Fanteceli.
2. **Roy Friedman** (Technion, Israel, 2007-2012), (1) on gossip benefits for wireless self-organizing networks; (2) on data dissemination strategies in wireless sensor networks with mobile sink, (3) on opportunistic forwarding in delay tolerant networks, and (4) on opportunistic storage system for mobile social networks;
Outcomes: 3 common publications (1 top-tier journal ACM SIGOPT OSR);
Involved students/post-doc: (PhD intern) Massimo Vecchio, (Post-Doc) Cigdem Sengul.
3. **Aruna Seneviratne** (NICTA/Univ. of Sidney, Australia, 2011-2016), on content sharing approach in mobile on-line social networks, combining advantages of distributed decentralized storage and opportunistic communications;
Outcomes: 3 top-tier publications (ACM MobiHoc 2013, IEEE TMC 2017, and PMC Elsevier journal 2014); the Best Thesis Award at UNSW in 2015; the development of our work at [Yalut application](#), which got the Best Demo Award at IEEE iToF 2013;
Involved PhD student: Kanchana Thilakarathna.
4. **Mauro Fonseca** (PUC-PR, Brazil, 2012-2018) on user-aware channel allocation in wireless networks. Outcomes involve the PhD thesis of R. Shiguetta. He was partner of the STIC AmSud UCOOL project and is partner of EMBRACE associated team;
Outcomes: 5 common publications;
Involved students: (PhD) Roni Shiguetta and (M.Sc.) P. R. Walenga Junior.
5. **Anelise Munaretto** (Technological and Federal Univ. of Parana – UTFPR, Brazil, 2009-2016), (1) on channel assignment in wireless networks and (2) on prediction-based forwarding protocol for Delay Tolerant Networks. She was partner of the STIC AmSud UCOOL project and is partner of EMBRACE associated team;
Outcomes: 6 common publications and the PhD thesis of A. C. K. Vendramin;
Involved students: (PhD) Ana Cristina K. Vendramin and (M.Sc.) P. R. Walenga Junior.

9) Enseignement / Teaching

Lectures to under-graduate engineering students at Institute Mines-Telecom:

"The culture of the small screen and the born of Tactful Networking "	3h (Mar. 2017)	Telecom SudParis
"Wireless Mobile Ad Hoc Networks and Opportunistic Networks"	6h (Nov. 2016)	Telecom SudParis
"La carrière de chercheur" and "Smartphone - 6ème sense"	1.5h (May 2016)	Telecom ParisTech

Lectures and tutorials in schools and symposiums:

"When completion challenges current human mobility understanding"	1h (Sep. 2019)	3rd Int. Seminar on Contemporary Mobility ⁽¹⁾ , PUC-MG, Minas Gerais, Brazil,
"Mobile phone sensing of human dynamics in techno-social environment"	1h (Sep. 2019)	AGRANDA symposium ⁽²⁾ , Salta, Argentina
"Human: The new <i>Terra Incognita</i> of networking"	1h30 (Feb. 2019)	GDR RSD and ASF Winter School, Pleynet, France
"Humans in the communication loop: enablers of next generation networks"	4h (May 2018)	Tutorial at SBRC 2018, Campos do Jordão, Brazil
"Mobile data traffic modeling - revealing temporal facets"	3h (Jun. 2017)	EBSIS summer school 2017 ⁽³⁾ , Timmendorfer Strand, Germany

(1) Seminar jointly organized with the latino-american researcher network for Transport and Accessibility in Low Income Communities.; (2) <http://48jaiio.sadio.org.ar/simposios/AGRANDA>; (3) School organized in the context of the EBSIS project of "Spreading Excellence and Widening Participation" topic in the Horizon 2020 work programme (<http://ebsis.info.uaic.ro>).

Lectures to under-graduate, masters and PhD students at foreign Universities:

"Toward a more tactful networking"	1h (Feb. 2017) 2h (Dec. 2016) 1h (Dec. 2016) 1h (Dec. 2016)	Univ. of Edinburgh, UK Federal Univ. of Goiás, Brazil Univ. of Coimbra, Portugal Univ. of Porto, Portugal
(visio) "Mobile context- and content-aware networking" and "MACACO project: objectives and challenges"	1h (Jul. 2015)	Shanghai Jiao Tong Univ., China
"The culture of the small screen and new advances in human behavior"	1h (Apr. 2015)	Univ. Técnica Federico Santa Maria (USM), Valparaíso, Chile
"The Internet of People and the culture of the small screen: Generating new opportunities for people getting connected"	2h (Nov. 2010)	Federal Univ. of Minas Gerais, Federal State Univ. of Rio de Janeiro, both in Brazil
"Wireless Networking Coding and the Pursuit of Truth"	2h (Nov. 2010)	Pontifical Catholic Univ. of Paraná, Technologic Federal Univ. of Paraná, both in Brazil
"Collaborative Data Collection in Global Sensing Systems"	2h (Nov. 2010)	State Univ. of São Paulo (USP), Brazil

Seminars:

"When Completion Challenges Current Human Mobility Understanding"	1h (Apr. 2019)	STIC AmSud MOTIf, Federal Univ. of Minas Gerais, Brazil
"When Completion Challenges Current Human Mobility Understanding"	45min (Jun. 2019)	IFIP TMA Conference, Experts Summit, Paris
"Human: The new <i>Terra Incognita</i> of networking"	30min (Oct. 2018)	CoFaBRAs Workshop, Univ. La Rochelle
"Human: The new <i>Terra Incognita</i> of networking"	30min (Nov. 2018)	Workshop on Urban Computing and Society, Petrópolis, Brazil
"Complete trajectory reconstruction from sparse " mobile phone data "	30min (Nov. 2018)	STIC AmSud MOTIf, LNCC, Petrópolis, Brazil
"Mobile data traffic modeling - revealing temporal facets"	1h (Jun. 2015)	GT Digicosme, Palaiseau
"Measurement-driven mobile data traffic modeling in a large metropolitan area"	1h (Mar. 2015)	Montevideo, Uruguay ⁽³⁾
"Telling apart social and random relationships in dynamic networks"	1h (Sep. 2013)	Workshop related to PAWS European project, Nottingham, UK
"The Internet of people and the culture of the small screen: Generating new opportunities for people getting connected"	1h (Aug. 2010)	Workshop on Internet of Things Shanghai, China

(3) Organized by Daniel Koffman from LINC/S/Telecom ParisTech, the workshop "Information and Communication Systems and their application to vertical

sectors" (<http://www.anii.org.uy/workshopuruguay/#objectives>) was targeted to gather together top-level researchers and experts, for (1) Exchanging on visions, recent scientific results and innovative ideas and (2) Triggering further collaboration with colleagues and teams in the Montevideo region.

Lecturer to Masters-level classes at University of Paris-Sud, France:

"Computer Network (ATM, DiffServ, RSVP, MPLS)"	12h (Nov. 2007)	Univ. of Paris-Sud
"Computer Network (ATM, DiffServ, RSVP, MPLS)"	12h (Nov. 2008)	Univ. of Paris-Sud

10) Diffusion de l'information scientifique / *Dissemination of scientific knowledge*

Interviews and articles for the general public:

- *Portrait INRIA (Sep. 2016)*: Interviewed by Charlotte Renaud (Chargée de Communication at INRIA Saclay), after my nomination as "10 Women in Networking / Communications That You Should Watch" (<https://www.inria.fr/centre/saclay/actualites/aline-carneiro-viana-portrait-d-une-chercheuse>).
- *Interview by the Scientific Culture French Interstices magazine (Oct. 2014)*: an audio interview with Joanna Jongwane, designer editor of the magazine and responsible for Interstices podcasts⁷. The review targets an audience that is not especially familiar with computers and/or digital sciences. The interview consisted in asking me questions related to my research work on wireless mobile networks and on the recording of my answers.
- *Parcours de Chercheuse INRIA (Apr. 2014)*: Interviewed by Cathreine Fressoz (Citizen Press) for the 3rd edition of the mathematics week, from 17th to 22nd March 2014 (<https://www.inria.fr/centre/saclay/actualites/aline-carneiro-viana-reseaux-sans-fil-et-sans-frontiere>).
- *Article in general purpose magazine: "Systèmes répartis de grande taille: de l'anarchie à l'auto-structuration"*. Réseaux et Télécoms (Lettre Bimestrielle), Editions Techniques de L'Ingénieur (May 2008) [94].

Talks and panels for the general public:

- *Speaker at "Futur en Seine" festival (June 2014)*: Presentation of the popularized version of the challenges and objectives of the EU MACACO project and a demo of the MACACOApp application to non-specialists at the "Futur en Seine" festival at the CNAM, France. *Title*: "Understanding human behavior for context- and content-aware networking". *Link*: <http://www.futur-en-seine.fr/fens2014/>.
- *Collegians presentation (Mar. 2014)*: Presentations to two highschool classes of Essouriau Collège at Ulis, during the "Semaine des Mathématiques" in France and of the theme "les maths au carrefour des cultures". *Titles*: (1) "Le smartphone, votre 6e sens", consisted in introducing my research activities; and (2) "La carrière et le métier de chercheur" consisted in interacting with students on subjects related to researchers career.
- *Panelist at event of N²Women community (Jun. 2013)*: at IEEE SECON 2013. The goal of N²Women events is to help female students and researchers pursue research carriers. *Panel topics*: "What are the potential industrial and academic positions for women?"; "How to overcome the job search challenges?"; "How to have a successful transition from graduate school to a full job position?".
- *Speaker at "Unithé ou Café" of INRIA Saclay (October 2013)*: an open 45-minute coffee meeting organized by the Communication Service of INRIA Saclay with all administrative employees and researchers. *Title*: "Le smartphone, votre 6e sens ?" 4 octobre 2013. *Link*: <https://intranet.saclay.inria.fr/vie-du-centre/unithe-cafe/rencontres-2013/smartphone-sens>.

Keynote speaker:

- [AGRANDA symposium](#)⁸, Salta, Argentina. Sep. 2019.
- [3rd Int. Seminar on Contemporary Mobility](#), at PUC-MG, Minas Gerais, Brazil, jointly organized with the latino-american researcher network for Transport and Accessibility in Low Income Communities. Sep. 2019.
- 4th GDR RSD and ASF Winter School on Distributed Systems and Networks, Feb. 2019⁹.
- CoUrb 2018, 2nd Workshop of Urban Computing¹⁰ jointly with SBRC 2018 (the 36th Brazilian Symposium on Computer Networks and Distributed Systems).
- EBSIS summer school 2017, Horizon 2020 work programme¹¹.

⁷https://interstices.info/jcms/c_34709/podcast-interstices

⁸https://drive.google.com/file/d/1h1nLsUStx-Yy6mDD_4RiSwKUrykBnIvZ/view

⁹<https://sites.google.com/site/rsdwinterschool/program-2019>

¹⁰<http://www.sbrc2018.ufscar.br/palestra-human-the-new-terra-incognita-of-networking/>

¹¹<http://ebsis.info.uaic.ro>

Invited speaker at conferences and workshops

- IFIP TMA 2019 Experts Summit¹²; Paris, France, Jun. 2019.
- “CoFaBRAs, *Territoires intelligents ou Smart Territories : la révolution numérique au service des territoires*”, Univ. La Rochelle, France, Oct. 2018.
- “Information and communication systems and their application to vertical sectors” workshop, Montevideo, Uruguay, March 2015 ¹³.
- Workshop related to PAWS European project, Nottingham, UK. Sep. 2013.
- GBR “Beyond Networking workshop”, Buzios, Rio de Janeiro, Brazil. 2011.
- Int’l Workshop on Internet of Things, Shanghai, China, Aug. 2010.

Invited lectures in the following Universities:

- Federal Univ. of Minas Gerais, Brazil (2019)
↔ “*When Completion Challenges Current Human Mobility Understanding*”;
- National Laboratory for Scientific Computing (LNCC), Brazil (2018)
↔ “*Complete trajectory reconstruction from sparse mobile phone data*”;
- Univ. of Edinburgh, UK (2017)
↔ “*Toward a more tactful networking*”;
- Univ. of Porto, Portugal (2016)
↔ “*Toward a more tactful networking*”;
- Univ. of Coimbra, Portugal (2016)
↔ “*Toward a more tactful networking*”;
- Univ. of Goiás (UFG), Brazil (2016)
↔ “*Toward a more tactful networking*”;
- Shanghai Jiao Tong University, China (2015)
↔ “*Mobile context- and content-aware networking*” and “*MACACO project: objectives and challenges*”;
- Univ. Technica Federico Santa Maria (USM), Valparaiso, Chile
↔ “*The culture of the small screen and new advances in human behavior*”;
- Complex Network research team of LIP6/UPMC at LIP6 (2012)
↔ “*Telling apart social and random relationships in wireless networks*”;
- State Univ. of São Paulo (USP), Brazil (2010)
↔ “*Collaborative Data Collection in Global Sensing Systems*”;
- Federal Univ. of Minas Gerais (UFMG), Brazil (2010)
↔ “*The Internet of People and the culture of the small screen: Generating new opportunities for people getting connected*”;
- Federal Univ. of the State of Rio de Janeiro (UniRio), Brazil (2010)
↔ “*The Internet of People and the culture of the small screen: Generating new opportunities for people getting connected*”;
- Pontifical Catholic University of Paraná (PUC-PR), Curitiba, Brazil (2010)
↔ “*Wireless Networking Coding and the Pursuit of Truth*”;
- Technologic Federal Univ. of Paraná (UTFPR), Curitiba, Brazil (2010)
↔ “*Wireless Networking Coding and the Pursuit of Truth*”;
- Univ. of Sapienza, Rome, Italy. (2010)
↔ “*Collaborative Data Collection in Global Sensing Systems*”;
- SWING team of INRIA Lyon, France (2010)
↔ “*Wireless Networking Coding and the Pursuit of Truth*”;
- TKN laboratory of the TU-Berlin, Germany (2009)
↔ “*Adaptive network schemes for resource-constrained wireless self-organizing networks*”;
- FOKUS laboratory, Berlin, Germany (2009)
↔ “*Flexible and adaptive forwarding in resource-constrained wireless self-organizing networks*”;
- Univ. of Thessaly, Greece (2005)
↔ “*Locating and routing in large scale self-organizing networks: from distributed hash tables to adaptive addressing structures*”.

11) Eléments divers / Other relevant information

None to report.

¹²<https://tma.ifip.org/2019/tma-experts/>

¹³<http://www.anii.org.uy/workshopuruguay/#objectives>

Formulaire 1 — LISTE COMPLÈTE DES CONTRIBUTIONS¹⁴

Form 1 — COMPLETE LIST OF CONTRIBUTIONS¹⁴

1. Publications caractéristiques/*Representative publications*

1. D. do C. Teixeira, A. C. Viana, M. S. Alvim, J. M. Almeida. Deciphering Predictability Limits in Human Mobility. **ACM SIGSPATIAL**. Chicago, USA, November 2019. (Acceptance ratio: 21.7%)
 - Predictability strategies have always been used as a black box and the particularities that affect their results not investigated yet. The used sophisticate compression algorithm makes hard to draw conclusions on what makes one's mobility more or less predictable. To the best of our knowledge, no previous work summarised the roots of predictability, tracing the equivalences between entropy and compressibility and showing why entropy is a good approximation to the complexity of a sequence of symbols, as we firstly did in this work. This paper was selected as one of the top-6 best papers at the [ACM SIGSPATIAL 2019 conference](#), ranked A according to Core ranking portal. A journal is in preparation.
2. G. Chen, A. C. Viana, M. Fiore, C. Sarraute. Complete Trajectory Reconstruction from Sparse Mobile Phone Data. **EPJ Data Science**. Volume 8, number 30. 2019. (Impact factor: 3.262)
 - This work leverage regularity in human movement patterns at the reconstruction of trajectories extracted from sparse and irregular-in-time datasets like mobile Call Detail Records. The trajectory reconstruction literature is relatively thin, and mostly focuses on a partial reconstruction that still leaves (possibly large) gaps in our knowledge of personal mobility. We present a novel and more effective approach to trajectory reconstruction, which allows completing *all missing trajectory data* with good accuracy. As discussed in Form 3, this work revealed important limitations of seminal literature works on human mobility and brought back very interesting research questions until now considered as settled.
3. E. Mucceli A. C. Viana, C. Sarraute, J. Brea, I. Alvarez-Hamelin. On the regularity of human mobility. **Elsevier Pervasive and Mobile computing** (PMC) Journal, Vol. 33, pp. 73-90, December 2016. (Impact Factor: 2.33)
 - It gave me the first intuitions on human behavior in terms of mobility. Besides, it is the 1st work in the literature unveiling persistent traits present in an individual's urban mobility (people's tendency to revisit few favorite venues using the shortest-path available) using a large variety of heterogeneous datasets. The outcomes of this work inspired three other PhD students I advised and continue to inspire my current works.

2. Publications

92 international Publications totalising 2432 citations (not include peered reviewed publications in French and Brazilian conferences). H-Index of 27 (according to Google Scholar). A complete publication list with my HDR and Ph.D. dissertations are available at: <http://pages.saclay.inria.fr/aline.viana/publication.html>.

Hereafter, only the journal paper number 26 and the conference papers number 29, 30, and 33 follows the alphabetical order. Otherwise, I have been using the level of implication of the author as protocol to decide on the order of the authors of publications: the Post-Doc/PhD/internship student(s) is usually the 1st author, followed by the collaborators; the advisors and senior co-authors can be ordered according to their contribution or on alphabetical order when contributions were similar.

Summary of peered reviewed publications

Position	Journals	Conferences	Book Chapters	Workshops	Others
CR1 (since Jan. 2009)	24	33	3	20	4 (French) + 11 (Brazilian) conferences
PhD + CR2 (Jan. 2002 - Dec. 2008)	5	4	1	2	4 (French) conferences
Total (111)	29	37	4	22	19

2.1 Revues internationales/*International journals*

Note: the impact factor (1) refers to the year of publication and (2) is the average number of times articles from a journal published in the past two years have been cited in the JCR (Journal Citation Report) year. These results are those generally used and relied upon by technical publications and their stakeholders. The high-quality journals are highlighted in bold.

1. G. Chen, A. C. Viana, M. Fiore, C. Sarraute. Complete Trajectory Reconstruction from Sparse Mobile Phone Data. **EPJ Data Science**. Volume 8, number 30. 2019. (Impact factor: 3.262)
2. T. H. Silva, A. C. Viana, F. Benevenuto, L. Villas, J. Salles, A. Loureiro, and D. Quercia. Urban Computing Leveraging Location-Based Social Network Data: a Survey. **ACM Computing Surveys**. Volume 52, number 1. 2019. (Impact factor: 5.55)
3. G. Chen, A. C. Viana, C. Sarraute, M. Fiore, S. Hoteit. Enriching Sparse Mobility Information in Call Detail Records. *Computer Communications Elsevier journal*. Volume 122, June 2018, Pages 44-58. (Impact factor: 2.613)
4. E. Mucceli A. C. Viana, K. P. Naveen, and C. Sarraute. Mobile Data Traffic Modeling: Revealing Temporal Facets. **Computer Network Elsevier journal**. Vol 112, Pages 176-193, January 2017. (Impact factor: 2.93)
5. K. Thilakarathna, A. C. Viana, A. Seneviratne, H. Petander. Design and analysis of an efficient friend-to-friend content dissemination system. **IEEE Transaction on Mobile Computing (TMC) journal**, Vol 16(3), pp. 702-715, March 2017. (Impact Factor: 3.74)
6. E. Mucceli A. C. Viana, C. Sarraute, J. Brea, I. Alvarez-Hamelin. On the regularity of human mobility. **Elsevier Pervasive and Mobile computing (PMC) Journal**, Vol. 33, pp. 73-90, December 2016. (Impact Factor: 2.33)
7. A. C. K. Vendramin, A. Munaretto, M. R. Delgado, A. C. Viana, and M. Fonseca. A Social-aware Routing Protocol for Opportunistic Networks. **Elsevier Expert System with Applications**. Vol. 54. Pages 351–363. July 2016. (Impact Factor: 4.68)
8. F. Cunha, L. Villas, A. Boukerche, G. Maia, A. C. Viana, R. A. F. Mini, A. A. F. Loureiro. Data Communication in VANETs: Survey, Applications, and Challenges. **Elsevier Ad Hoc Networks**, 44 (C), Pages 90–103. 2016. (Impact factor: 2.82)
9. M. S. Kuran, A. C. Viana, L. Iannone, D. Kofman, G. Mermoud, and J.-P. Vasseur. "A Smart Parking Lot Management System for Scheduling the Recharging of Electric Vehicles". **IEEE Transaction on Smart Grid Journal**. Vol. 6(6), pp. 2942–2953. Nov. 2015. (Impact factor: 7.88)
10. P. Olmo V. de Melo, A. C. Viana, M. Fiore, K. Jaffres-Runser, F. Le Mouel, A. A. F. Loureiro, Lavanya Addepallib, and Chen Guangshuo. "RECAST: Telling Apart Social and Random Relationships in Dynamic Networks". *Elsevier Performance Evaluation Journal*. Vol. 87, pp. 19–36, May 2015. (Impact Factor: 1.87)
11. G. Maia, L. A. Villas, A. C. Viana, Andre L. L. Aquino, A. Boukerche, A. A. F. Loureiro. "A Rate Control Video Dissemination Solution for Extremely Dynamic Vehicular Ad hoc Networks". *Elsevier Performance Evaluation Journal*. Vol. 87, pp. 3–18, May 2015. (Impact Factor: 1.87)
12. M. V. Barbera, A. C. Viana, M. D. de Amorim, and J. Stefa. "Data Offloading in social mobile networks through VIP Delegation". **Elsevier Ad Hoc Networks Journal**. Vol. 19. Pages 92–110. August 2014. (Impact factor: 3.36)
13. K. Thilakarathna, A. C. Viana, A. Seneviratne, H. Petander. "User Generated Content Dissemination in Mobile Social Networks through Infrastructure Supported Content Replication". **Elsevier Pervasive and Mobile Computing (PMC) Journal**, Vol. 11. Pages 132-147. April 2014. (Impact Factor: 3.38)
14. M. H. Rehmani, A. C. Viana, H. Khalife, and S. Fdida. "SURF: A Distributed Channel Selection Strategy for Data Dissemination in Multi-Hop Cognitive Radio Networks". *Elsevier Computer Communications Journal*, Vol. 31. Issues 10-11. June 2013. (Impact factor: 2.78)
15. G. Maia, Daniel L. Guidoni, Aline C. Viana, Andre L. L. Aquino, Raquel A. F. Mini, Antonio A. F. Loureiro. "A Distributed Data Storage Protocol for Heterogeneous Wireless Sensor Networks with Mobile Sinks". **Elsevier Ad Hoc Networks Journal**, Vol. 1, Issue 5, July 2013. (Impact factor: 3.54)
16. N. Karowski, A. Carneiro Viana, and Adam Wolisz, "Optimized Asynchronous Multi-channel Discovery of IEEE 802.15.4-based Wireless Personal Area Networks". **IEEE Transaction on Mobile Computing**, Vol. 12, Issue 10. October 2013. (Impact Factor: 5.67)
17. A. Carneiro Viana and M. D. De Amorim, "Coverage Strategy for Periodic Readings in Robotic-Assisted Monitoring Systems Ad Hoc Networks". **Elsevier Ad Hoc Networks journal**. Vol. 11, Issue 7. September 2013. (Impact factor: 3.54)
18. A. C. K. Vendramin, A. Munaretto, M. R. Delgado, and A. C. Viana, "Grant: Inferring best forwarders from complex networks' dynamics through a greedy ant colony optimization", **Elsevier Computer Networks**, special issue "Complex Dynamic Networks: Tools and Methods". Volume 56, Issue 3, pp. 997 –1015, February 2012. (Impact factor: 3.28)

19. F. Le Fessant, A. Papadimitriou, A. C. Viana, C. Sengul, and E. Palomar. "A Sinkhole Resilient Protocol for Wireless Sensor Networks: Performance and Security Analysis". *Elsevier Computer Communications journal*, 35, issue 2 pages 234–248. January 2012. (Impact factor: 2.47)
20. C. Sengul, A. C. Viana, and A. Ziviani. "A Survey of Adaptive Services to Cope with Dynamics in Wireless Self-Organizing Networks". **ACM Computing Surveys**, vol 44, Issue 4, August 2012. (Impact factor: 15.88)
21. P. R. Walenga Junior, M. Fonseca, A. Munaretto, A. C. Viana, and A. Ziviani. "ZAP: A Distributed Channel Assignment Algorithm for Cognitive Radio Networks". Special Issue on Multiple Access Communications in Future-Generation Wireless Networks. *Springer Eurasip Journal on Wireless Communications and Networking*, vol. 2011, article number 27. July 2011. (Impact factor: 1.98)
22. A. C. Viana, S. Maag, F. Zaidi. "One step forward: Linking Wireless Self-Organizing Networks Validation Techniques with Formal Testing approaches". **ACM Computing Surveys**. Vol. 43, issue 2. June 2011. (Impact factor: 18.08)
23. M. Vecchio, A. C. Viana, A. Ziviani, R. Firedman. "Deep: Density-based Proactive Data Dissemination Protocol for Wireless Sensor Networks with Uncontrolled Sink Mobility". *Elsevier Computer Communications*. Vo. 33, issue 8, pages 929-939. May 2010. (Impact factor: 2.53)
24. A. C. Viana, A. Ziviani, R. Friedman. "Decoupling Data Dissemination from Mobile Sink's Trajectory in Wireless Sensor Networks". *IEEE Communications Letters*. Vol. 13, issue 3. March 2009. (Impact factor: 2.20)
25. J. Rahme, A. C. Viana, K. Al Agha. "Looking for network functionalities' extension by avoiding energy-compromised hotspots in wireless sensor networks". *Springer Annals of Telecommunications* (Special Issue on Home Networking). Vol. 63, Number 9-10, pages 487-500 . October 2008 (Impact factor: 0.45)
26. R. Friedman, D. Gavidia, L. Rodrigues, A. C. Viana, and S. Voulgaris. "Gossiping on MANETs: the Beauty and the Beast". **ACM SIGOPT Operating Systems Review** (ACM SIGOPT OSR) - v.41, no 4, October 2007. (Impact factor: 4.63)
27. A. C. Viana, Marcelo D. de Amorim, Yannis Viniotis, Serge Fdida, José F. de Rezende. Twins: A Dual Addressing Space Representation for Self-organizing Networks. **IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS)** - v.17, no 12, pages 1468-1481. December 2006. (Impact factor: 3.51)
28. A. C. Viana, Marcelo D. Amorim, Serge Fdida, José F. de Rezende. "Self-organization in spontaneous networks: the approach of DHT-based routing protocols" . **Elsevier Ad Hoc Networks Journal**, 3 (5). September 2005. (Impact factor: 8.03)
29. A. C. Viana, Marcelo D. Amorim, Serge Fdida, José F. de Rezende. "An Underlay Strategy for Indirect Routing", **ACM/Springer Wireless Networks**, 10(6), November 2004 (Impact factor: 10.38)

2.2 Conférence internationales avec comité de lecture/Reviewed international conferences

Note: The high-quality conferences ranked A or A* according to [Core ranking portal](#) are highlighted in bold.

1. D. do C. Teixeira, A. C. Viana, M. S. Alvim, J. M. Almeida. Deciphering Predictability Limits in Human Mobility. **ACM SIGSPATIAL**. Chicago, USA, November 2019. (Acceptance ratio: 21.7%)
2. F. F. Fonseca, L. Mamatás, A. C. Viana, S. Correa, K. V. Cardoso. Personalized Travel Itineraries with Multi-access Edge Computing Touristic Services. IEEE GLOBECOM. Big Island, HI, USA, December 2019.
3. P. Katsikouli, A. C. Viana, M. Fiore, A. Tarable. On the Sampling Frequency of Human Mobility. IEEE GLOBECOM. Singapore, December 2017. (Acceptance ratio: 32%)
4. G. Chen, A. C. Viana, M. Fiore, C. Sarraute. The Spatiotemporal Interplay of Regularity and Randomness in Cellular Data Traffic. **IEEE LNC**. Singapore. October 2017.
5. R. Shiguetta, M. Fonseca, Aline C. Viana. A Mobility-Aware Channel Allocation Strategy for Clustered Ad hoc Network. IEEE VTC-Spring. Sydney, Australia, June 2017.
6. R. Shiguetta, M. Fonseca, Aline C. Viana. User Behavior-Aware Channel Allocation Scheme for Mobile Ad hoc Networks. IEEE IPCCC, Las Vegas. USA. December 2016. (Acceptance ratio: 27.5%)
7. D. P. Paramo, L. Iannone, D. Kofman, and A. C. Viana. Adaptation of Topology-Based Routing Protocols for Data Gathering Applications in VANETs. IEEE Vehicular Networking Conference (VNC). Kyoto. Japan, Dec. 2015.
8. E. Mucceli A. C. Viana, K. P. Naveen, and C. Sarraute. "Measurement-driven mobile data traffic modeling in a large metropolitan area". **IEEE Percom**. Missouri. March, 2015. (Acceptance ratio: 15%)
9. R. Shiguetta, M. Fonseca, Aline C. Viana. A Strategy for Opportunistic Cognitive Channel Allocation in Wireless Internet of Things. IFIP Wireless Days, Rio de Janeiro, Brazil. November 2014.

10. T. H. Silva, P. O. S. Vaz de Melo, J. M. Almeida, A. C. Viana, J. Salles, and A. A. F. Loureiro. "Participatory Sensor Networks as Sensing Layers". IEEE International Conference on Social Computing and Networking (SocialCom2014). Sydney, Australia. December 2014.
11. F. Cunha, A. C. Viana, R. A. F. Mini, A. A. F. Loureiro. "Socially inspired data dissemination for vehicular ad hoc networks". **ACM MSWIM**, Montreal, Canada. September 2014. (Acceptance ratio: 24.6%)
12. E. Mucceli and A. C. Viana. "From routine to network deployment for data offloading in metropolitan areas". **IEEE SECON**. Singapore. June. 2014. (Acceptance ratio: 19%)
13. F. Cunha, A. C. Viana, R. A. F. Mini, A. A. F. Loureiro. "Is it possible to find social properties in vehicular networks?". IEEE ISCC. Madeira, Portugal. June 2014.
14. E. Mucceli and A. C. Viana. "From routing to better network services" (short paper). IFIP WMNC. Vilamoura, Portugal. May 2014. (Acceptance ratio: 32.9%)
15. E. Mucceli and A. C. Viana. "Routine-based network deployment for data offloading in metropolitan areas". IEEE WCNC. Istanbul, Turkey. April. 2014. (Acceptance ratio: 42.3%)
16. T. H. Silva, P. O. S. Vaz de Melo, A. C. Viana, J. M. Almeida, J. Salles, and A. A. F. Loureiro. "Traffic condition is more than colored lines on a map: Characterization of Waze alerts". SocInfo 2013. Kyoto, Japan. November 2013.
17. P. Olmo V. de Melo, A. C. Viana, M. Fiore, K. Jaffres-Runser, F. Le Mouel, A. A. F. Loureiro. "RECAST: Telling Apart Social and Random Relationships in Dynamic Networks". **ACM MSWIM**, Barcelona, Spain, November 2013. (Acceptance ratio: 25.9%)
18. G. Maia, C. Rezende, L. A. Villas, D. L. Guidoni, A. Boukerche, A. C. Viana, Andre L. L. Aquino, A. A. F. Loureiro. "Traffic Aware Video Dissemination Over Vehicular Ad hoc Networks". **ACM MSWIM**, Barcelona, Spain, November 2013. (Acceptance ratio: 25.9%)
19. K. Thilakarathna, A. C. Viana, A. Seneviratne, H. Petander. "Mobile Social Networking through Friend-to-Friend Opportunistic Content Dissemination", **ACM Mobihoc**. Bangalore, India. August 2013. (Acceptance ratio: 15%)
20. G. Maia, L. A. Villasy, A. Boukerche, A. C. Viana, A. L. L. Aquino, and A. A. F. Loureiro. "Data Dissemination in Urban Vehicular Ad Hoc Networks with Diverse Traffic Conditions". IEEE ISCC. Split, Croatia, July 2013. (Acceptance ratio: 48.7 %)
21. G. Maia, A. Boukerche, A. L. L. Aquino, A. C. Viana, and A. A. F. Loureiro. "A Data Dissemination Protocol for Urban Vehicular Ad hoc Networks with Extreme Traffic Conditions". IEEE ICC - Wireless Networking Symposium. June 2013. (Acceptance ratio: 39.1 %)
22. A. C. K. Vendramin, A. Munaretto, M. R. Delgado, and A. C. Viana, "CGrAnt: a Swarm Intelligence-based Routing Protocol for Delay Tolerant Networks". **ACM GECCO**. Philadelphia. USA. July 2012. (Acceptance ratio: 37%)
23. M. H. Rehmani, A. C. Viana, H. Khalife, and S. Fdida. "Activity Pattern Impact of Primary Radio Nodes on Channel Selection Strategies". 4th International Conference on Cognitive Radio and Advanced Spectrum Management (CogART). Paris, France. September 2011. (Invited Paper)
24. M. H. Rehmani, A. C. Viana, H. Khalife, and S. Fdida. "Improving Data Dissemination in Multi-Hop Cognitive Radio Ad-Hoc Networks". AdHocNets. Paris, France. September 2011 (Invited Paper).
25. G. Bigwood, A. C. Viana, M. Boc, M. D. de Amorim, "Collaborative Data Collection in Global Sensing Systems". **IEEE LCN**. Bonn, Germany, October 2011. (Acceptance ratio: 29.3%)
26. M. V. Barbera, J. Stefa, A. C. Viana, M. D. de Amorim, and M. Boc. "VIP Delegation: Enabling VIPs to Offload Data in Wireless Social Mobile Networks". IEEE DCOSS. Barcelona, Spain. June 2011.
27. N. Karowski, A. C. Viana, A. Wolisz. "Optimized Asynchronous Multi-channel Neighbor Discovery". **IEEE Infocom** 2011. Shanghai, China. May 2011. (Acceptance ratio: 16%)
28. M. Rehmini, A. C. Viana, H. Khalife. "A Cognitive Radio Based Internet Access Framework for Disaster Response Network Deployment". 4th International Conference on Cognitive Radio and Advanced Spectrum Management (CogART). Rome, Italy, November 2010. (Invited Paper)
29. A. C. Viana, N. Mitton, L. Schmidt, and M. Vecchio. "A k-layer self-organizing structure for product management in stock-based networks". IEEE International Conference on e-Business Engineering (ICBE), Shanghai, China, November 2010.
30. A. C. Viana, T. Herault, T. Largillier, S. Peyronnet, and F. Zaidi. "Supple: a flexible probabilistic data dissemination protocol for wireless sensor networks". **ACM MSWIM**, Bodrum, Turkey, October 2010. (Acceptance ratio: 32.6%)
31. T. Razafindralambo, N. Mitton, Aline C. Viana, M. D. de Amorim, and K. Obraczka, "Adaptive Deployment for Pervasive Data Gathering in Connectivity-Challenged Environments", **IEEE Percom**, Mannheim, Germany, April 2010. (Acceptance ratio: 11.5%)
32. G. Karbaschi, A. C. Viana, S. Martin, and K. Al Agha. "On using network coding in multi-hop wireless networks". IEEE PIMRC. September 2009. (Acceptance ratio: 44.2%)
33. A.-M. Kermarrec, A. Mustefaoui, M. Raynal, G. Tredan, A. C. Viana, "Large-scale networked systems: from anarchy to geometric self-structuring". ICDCN. Gachibowli Hyderabad, India. January 2009. (Acceptance ratio: 13.6%)

34. J. Rahme, A. C. Viana and K. Al Agha. "Avoiding energy-compromised hotspots in resource-limited wireless networks". IFIP 1st Home Networking Conference (IHN). Paris, France. December 2007.
35. J. I. Alvarez-Hamelin, A. C. Viana, M. D. de Amorim. "DHT-based Functionalities Using Hypercubes", IFIP 1st International Conference on Ad-Hoc Networking in WCC 2006, Santiago, Chile. August 2006.
36. A. C. Viana, M. D. Amorim, Y. Viniotis, S. Fdida, J. F. Rezende. "Easily-managed and topology-independent location service for self-organizing networks". **ACM Mobihoc**, Urbana- Champaign, IL. May 2005. (Acceptance ratio: 14.2%)
37. A. C. Viana, M. D. Amorim, S. Fdida, J. F. Rezende. "Indirect Routing using Distributed Location Information", **IEEE PerCom**. Dallas-Fort Worth, Texas, March 2003. (Acceptance ratio: 15.6%)

2.3 Livres et chapitres de livre/*Books and book chapters*

1. R. Costa, L. Sampaio, A. Ziviani, A. C. Viana. Humanos no ciclo de Comunicacao. Short course of 36th edition of the Brazilian Symposium on Computer Networks and Distributed Systems (SBRC), Brazilian Computer Society (SBC). To appear as a chapter of book named "Short-courses SBRC 2018". May 2018. (ISBN to be defined).
2. Felipe. D. Cunha, Guilherme Maia, Leandro Villas, Aline C. Viana, Raquel A. F. Mini, Antonio A. F. Loureiro, Socially Inspired Data Dissemination for Vehicular Ad Hoc Networks, Book chapter accepted - Vehicular Social Networks book, CRC PRESS - 2016.
3. A. C. Viana and M. Bertier. "Data aggregation as an essential paradigm in Wireless Sensor Networks". Book chapter at the Ad Hoc Networks: New Research, Nova Science Publisher, Inc., Aug. 2009, no. ISBN:9781604568950
4. M. D. Amorim, F. Benbadis, M. L. Sichitiu, A. V. Viana, and Y. Viniotis. "Routing in Wireless Self-Organizing Networks". Book chapter at the work Adaptation in Wireless Communications - 2 Volume Set, Taylor and Francis Group, LLC, Aug. 2008, no. ISBN: 9781420045994

2.4 Workshops internationaux avec comité de lecture/*Reviewed international workshops*

1. L. Amichi, A. C. Viana, M. Crovella, A. F. Loureiro. Mobility profiling: Identifying *scouters* in the crowd. Student Workshop of ACM Conext 2019.
2. L. S. de Oliveira, P. O. S. Vaz de Melo, A. C. Viana. Measuring Power Relations among Locations from Mobility Data. ACM MobiWac 2019 jointly with ACM MSWIM. Miami, USA. November 2019.
3. J. B. Borges, H. S. Ramos, R. A. F. Mini, A. C. Viana, A. A. F. Loureiro. The quest for sense: Physical Phenomena Classification in the Internet of Things. ISIoT 2019 (1st Int. Workshop on Intelligent Systems for the Internet of Things) jointly with IEEE DCOSS. Santorini, Greece. May 2019.
4. E. Lima, A. Aguiar, A. C. Viana and P. Carvalho. Impacts of Human Mobility in Data Offloading. ACM CHANTS, jointly with ACM MobiCom. New Delhi, India. October 2018.
5. G. Chen, A. C. Viana, M. Fiore. Takeaways in Large-scale Human Mobility Data Mining (invited paper). IEEE International Symposium on Local and Metropolitan Area Networks, Jun 2018, Washington, United States.
6. G. Chen, A. C. Viana, C. Sarraute. Towards an Adaptive Completion of Sparse Call Detail Records for Mobility Analysis (invited paper). IEEE Workshop on Data Analytics for Mobile Networking (DAMN) jointly with IEEE PERCOM. Hawaii, US. March. 2017.
7. S. Hoteit, G. Chen, A. Viana and M. Fiore. Filling the Gaps: On the Completion of Sparse Call Detail Records for Mobility Analysis (invited paper). ACM CHANTS, jointly with ACM MobiCom. NY, US. October 2016. (Invited Paper)
8. F. Cunha, D. A. Alvarenga, G. Maia, A. C. Viana, R. A. F. Mini, A. A. F. Loureiro. Exploring Interactions in Vehicular Networks. ACM MobiWac. Malta. November 2016.
9. F. Cunha, D. A. Alvarenga, A. C. Viana, R. A. F. Mini, A. A. F. Loureiro. Understanding interactions in vehicular networks through taxi mobility. ACM International Symposium on Performance Evaluation of Wireless Ad Hoc, Sensor, and Ubiquitous Networks (ACM PE-WASUN), Cancun, Mexico. November 2015.
10. E. Da N. Gomes, C. Alberto V. Campos, S. Lucena and A. C. Viana. A Message Removal Mechanism for Delay Tolerant Networks. The 2nd International Symposium on Ubiquitous Networking. Casablanca, Morocco, May 2016.
11. K. P. Naveen, L. Massoulie, E. Baccelli, A. C. Viana, D. Towsley. "On the interaction between content caching and request assignment in cellular cache networks". ACM All Things Cellular (ATC'15) workshop in conjunction with ACM SIGCOMM 2015. London, UK. August 2015.
12. E. Muceli, A. C. Viana, K. P. Naveen, and C. Sarraute. Analysis and Modeling of Mobile Data Traffic in Mexico City. NetMob, MIT, April 2015.
13. M. S. Kuran, A. C. Viana, L. Iannone, D. Kofman, G. Mermoud, J.-P. Vasseur. "Smart Cities Recharged: Improving Electrical Vehicles Recharging by Routine-Aware Scheduling". IEEE International Workshop on Smart City and Ubiquitous Computing Applications (SCUCA'14) in conjunction with IEEE WiMob 2014. Lanarca, Cyprus, October 2014.

14. F. D. Cunha, G. Maia, A. C. Viana, R. A. F. Mini, A. A. F. Loureiro. "How effective is to look at a Vehicular Network under a Social Perception?" Internet of Things Communications and Technologies (IoT 2013) in conjunction with IEEE WIMob 2013. Lyon, France. October 2013.
15. E. Mucceli and A. C. Viana. "From Your Routine to Hotspot Deployment for Data Offloading". ACM CoNEXT Student Workshop. Nice, France. December 2012.
16. G. Maia, D. L. Guidoni, A. C. Viana, A. L. L. Aquinoz, R. A. F. Mini, and A. A. F. Loureiro. "HyDi: A Hybrid Data Dissemination Protocol for Highway Scenarios in Vehicular Ad hoc Networks." 2nd ACM Symposium on Development and Analysis of Intelligent Vehicular Networks and Applications (ACM DIVANet) in conjunction with ACM MSWIM 2012. Paphos, Cyprus Island. October 2012.
17. A. C. K. Vendramin, A. Munaretto, M. R. Delgado, and A. C. Viana, "A Greedy Ant Colony Optimization for Routing in Delay Tolerant Networks", IEEE Smart Communication Protocols & Algorithms workshop (SCPA) in conjunction with IEEE Globecom 2011. Texas, USA. December 2011.
18. A. Papadimitriou, F. Le Fessant, A. C. Viana, C. Sengul. "Cryptographic Protocols to Fight Sinkhole Attacks on Tree-based Routing in Wireless Sensor Networks". 5th Workshop on Secure Network Protocols (NPsec 2009), in conjunction with ICNP. Princeton, New Jersey, USA. October 2009.
19. G. Karbaschi, A. C. Viana. "A content-based network coding to match social interest similarities in delay tolerant networks". 1st Extreme Workshop on Communication (ExtremeCom). Laponia, Sweden, August 2009.
20. C. Sengul, A. C. Viana, R. Friedman, M. Bertier, and A.-M. Kermarrec. "The Importance of Being Adaptive for Forwarding". 1st Extreme Workshop on Communication (ExtremeCom). Laponia, Sweden. August 2009.
21. A. C. Viana and M. D. de Amorim. "Sensing and acting with predefined trajectories". ACM Workshop on Heterogeneous Sensor and Actor Networks (ACM HeterSanet) with ACM Mobihoc. Hong Kong, China. May 2008.
22. E. Le Merrer, V. Gramoli, A. C. Viana, M. Bertier, A.-M. Kermarrec. "Energy Aware Self-organizing Density Management in Wireless Sensor Networks", 1st International Workshop on Decentralized Resource Sharing in Mobile Computing and Networking (ACM MobiShare) with ACM Mobicom, Los Angeles, CA. September 2006.

2.5 Conférence nationales avec comité de lecture/*Reviewed national conferences*

1. P. Katsikouli, A. C. Viana, M. Fiore, A. Tarable. L'étude de la fréquence d'échantillonnage des mouvements des humains. Rencontres Francophones sur la Conception de Protocoles, l'Évaluation de Performance et l'Expérimentation des Réseaux de Communication (CoRES), May 2018, Roscoff, France. 2018.
2. G. Chen, S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Forecasting Individual Demand in Cellular Networks. Rencontres Francophones sur la Conception de Protocoles, l'Évaluation de Performance et l'Expérimentation des Réseaux de Communication (CoRES), May 2018, Roscoff, France. 2018.
3. G. Chen, A. C. Viana, M. Fiore. Human Trajectory Recovery via Mobile Network Data. Rencontres Francophones sur la Conception de Protocoles, l'Évaluation de Performance et l'Expérimentation des Réseaux de Communication (CoRES), May 2018, Roscoff, France. 2018.
4. S. Hoteit, Guangshuo Chen, Aline Carneiro Viana and Marco Fiore. Spatio-Temporal Completion of Call Detail Records for Human Mobility Analysis. CoRes - 2eme conférence francophone centrée les réseaux et protocoles de communication. Quiberon. May 2017.
5. G. Tredan, A. C. Viana. Systèmes répartis de grande taille: de l'anarchie à l'auto-structuration. Réseaux et Télécoms (Lettre Bimestrielle), Editions Techniques de L'Ingénieur. May 2008.
6. G. Tredan and A. C. Viana. [VINCOS] Systèmes répartis de grande taille: de l'anarchie à l'auto-structuration. CFIP - Colloque Francophone sur l'Ingénierie des Protocoles, Les Arcs. March 2008.
7. A. C. Viana, Marcelo D. Amorim, Serge Fdida, José F. de Rezende. Routage basé sur ancre dans les réseaux à large échelle auto-organisables. CFIP - Colloque Francophone sur l'Ingénierie des Protocoles, Paris. October 2003.
8. A. C. Viana, Marcelo D. Amorim, Serg e Fdida, José F. de Rezende. Routage pair-à-pair dans les réseaux spontanées à large échelle. Algotel'03 - 5ème Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications. Banyuls-sur-mer. May 2003.

2.6 Rapports de recherche et articles soumis/*Research reports and publications under review*

1. **(under submission)** R. Lima Costa, Aline C. Viana, A. Ziviani, L. N. Sampaio. Tactful Networking: Humans in the communication loop. IEEE Transactions on Emerging Topics in Computational Intelligence. 2020.
2. **(under submission)** A. C. Viana, A. Di Luzio, K. Jaffrès-Runser, A. Mei, J. Stefa. Accurately Inferring Personality Traits from the Use of Mobile Technology. ACM Transaction on Data Science. 2019
3. **(under submission)** L. Amichi, A. C. Viana, M. Crovella. Identifying *scouters* in the crowd. UbiComp 2020.
4. **(under submission)** E. Lima, A. Aguiar, A. C. Viana and P. Carvalho. On the Properties of Human Mobility for Mobile Data Offloading. IEEE WoWMoM. 2020.

5. **(under submission)** L. Amichi, A. C. Viana, M. Crovella. Explorateur ou Routinier: Quel est votre profile de mobilité? Algotel 2020.
6. A. C. Viana, A. Di Luzio, K. Jaffrès-Runser, A. Mei, J. Stefa. Accurately Inferring Personality Traits from the Use of Mobile Technology. 2018. HAL-01954733, INRIA Saclay. December 2019.
7. G. Chen. S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Individual Trajectory Reconstruction from Mobile Network Data. HAL TR-0495, INRIA Saclay. December 2018.
8. R. Lima Costa, Aline C. Viana, A. Ziviani, L. N. Sampaio. Tactful Networking: Humans in the communication loop. HAL TR, INRIA Saclay. 2018.
9. G. Chen. S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Enriching Sparse Mobility Information in Call Detail Records . HAL TR-0496, INRIA Saclay. 2018.
10. G. Chen. S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Individual Trajectory Reconstruction from Mobile Network Data. HAL TR-0495, INRIA Saclay. 2018.
11. G. Chen. S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Spatiotemporal Individual Mobile Data Traffic Prediction. HAL TR-0497, INRIA Saclay. 2018.
12. P. Katsikouli, Aline C. Viana, M. Fiore, and A. Tarable. On The Sampling Frequency of Human Mobility. HAL TR-0487, INRIA Saclay. 2017.
13. G. Chen. S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Relevance of Context for the Temporal Completion of Call Detail Record. HAL TR-0482, INRIA Saclay. 2016.
14. G. Chen. S. Hoteit, A. C. Viana, M. Fiore, C. Sarraute. Spatio-Temporal Predictability of Cellular Data Traffic. HAL TR-0483, INRIA Saclay. 2016.
15. E. Mucceli, A. C. Viana, K. P. Naveen, and C. Sarraute. Measurement-driven mobile data traffic modeling in a large metropolitan area. INRIA Research Report, RR-8613. October 2014.
16. Roy Friedman, David Sainz, and Aline C. Viana. An Opportunistic Data Backup System for Mobile Ad Hoc Networks, Technion Technical Report, CS-2012-05. May 2012.
17. K Thilakarathna, A. C. Viana, A. Seneviratne, H. Petander. The Power of Hood Friendship for Opportunistic Content Dissemination in Mobile Social Networks, INRIA Research Report, 2012, RR-8042. August 2012.
18. G. Maia, D. L. Guidoni, A. C. Viana, A. L. L. Aquinoz, R. A. F. Mini, and A.A. F. Loureiro, ProFlex: A Probabilistic and Flexible Data Storage Protocol for Heterogeneous Wireless Sensor Networks, INRIA Research Report, 2011, RR-7695. July 2011.
19. A. C. K. Vendramin, A. Munaretto, M. R. Delgado, and A. C. Viana, Grant: Inferring best forwarders from complex networks' dynamics through a greedy ant colony optimization, INRIA Research Report, 2011, RR-7694. July 2011.
20. M. H. Rehmani, A. C. Viana, H. Khalife, and S. Fdida, SURF: A Distributed Channel Selection Strategy for Data Dissemination in Multi-Hop Cognitive Radio Networks. INRIA Technical Report RR-7628. May 2011.
21. M. V. Barbera, J. Stefa, A. C. Viana, M. D. Amorim, M. Boc, VIP Delegation: Enabling VIPs to Offload Data in Wireless Social Mobile Networks. INRIA Technical Report RR-7563. March 2011.
22. G. Bigwood. A. C. Viana, M. Boc, M. D. de Amorim, Opportunistic data collection through delegation. INRIA Technical Report RR-7361. August 2010.
23. A. C. Viana, N. Mitton, L. Schmidt, and M. Vecchio, SELF-orgaNizing Structures for mAnagemenT In stock Oriented Networks. INRIA Technical Report RR-7192. February 2010.
24. M. H. Rehmani, A. C. Viana, H. Khalife, and S. Fdida, Toward Reliable Contention-aware Data Dissemination in Multi-hop Cognitive Radio Ad Hoc Networks. INRIA Technical Report RR-0375. December 2009.
25. G. Karbaschi, A. C. Viana, S. Martin, and K. Al Agha, On Delay Fairness for Multiple Network Coding Transmissions. INRIA Technical Report RR-6972. July 2009.
26. M. Vecchio, A. C. Viana, A. Ziviani, R. friedman, Proactive Data Dissemination in WSNs with Uncontrolled Sink Mobility. INRIA Technical Report RR-6820. January 2009.
27. S. Maag, A. C. Viana, F. Zaidi, One step forward: Linking Wireless Self-Organizing Networks Validation Techniques with Formal Testing Approaches. INRIA Technical Report RR-6817. January 2009.
28. C. Sengul, A. C. Viana, R. friedman, M. Bertier, A.-M. Kermarrec, Adaptive Forwarding to Match Mobility Characteristics in Delay Tolerant Networks. INRIA Technical Report RR-6816. January 2009.
29. A. Papadimitriou, F. Le Fessant, A. C. Viana, C. Sengul, Fighting Sinkhole Attacks in Tree-based Routing Topologies. INRIA Technical Report RR-6811. January 2009.
30. G. Tredan, A. C. Viana, A.-M. Kermarrec, M. Raynal, A. Mustefaoui, Border detection mechanism from scratch in a autonomous system. INRIA Technical Report PI-1876. November 2007.
31. J. I. Alvarez-Hamelin, A C. Viana, M. D. Amorim. Architectural Considerations for a Self-Configuring Routing Scheme for Spontaneous Networks. cs.NI/0510082, arXiv e-print service in Computer Science (<http://fr.arxiv.org/abs/cs.NI/0510082>)

32. A. C. Viana, M. D. Amorim, Y. Viniotis, Serge Fdida, José F. de Rezende. Twins: Easy-Managed Location in Self-Organizing Networks Using Hilbert Space-Filling Curves. TR 04/02, CACC, North Carolina State University, Raleigh, USA. July 2004

I have also co-authored the following:

- **Pending patent:** together with M. Fiore and P. Katsikouli we started at Inria the procedure to register the patent named "Mobility Adaptive Location Sampling System for Mobile Devices";
- a Brief Announcement at PODC: G. Tredan, A. C. Viana, A.-M. Kermarrec, M. Raynal, A. Mustefaoui, "From anarchy to geometric structuring: the power of virtual coordinates". ACM PODC (BA). Toronto, Canada. August 2008;
- two posters: (1) one at NetMob 2019, which got the **Best Poster Award** and (2) one at IEEE Infocom 2005;
- **11 papers in the SBRC Brazilian conference (with peering review)**, the biggest and most important Brazilian conference in networking (average acceptance ratio is of 33%). Each year it provides talks of very known keynotes from all around the world, such as: Vint Cerf (Google), Jon Crowcroft (UCL), Vijay K. Bhargava (Univ. of British Columbia), Christophe Diot (Technicolor), Scott Shenker (Univ. of California, Berkeley). Anne-Marie Kermarrec and Rachid Guerraoui were invited as keynotes for SBRC 2020.

3. **Développements technologiques : logiciel ou autre réalisation / Technology development : software or other realization**

1. AdaptiveSamplingApp and FixedSamplingApp Android application (2018-)

Software characterization: A-1; SO-4; SM-2; EM-2; SDL-1

Own contribution: DA-4, CD-1, MS-2, TPM-4

Implication: 30%. **People involved:** D. Madriaga, P. Katsikouli, and M. Fiore

Lines of code: 4412

Description: Two mobile phone Android applications for the sampling of phone's information on positioning (through, e.g., GPS and WiFi/Cellular environment): the FixedSamplingApp application periodically (i.e., in constant intervals) samples such information, analysed in details in [39]; the AdaptiveSamplingApp application samples such information in a way that is adapted to the speed of movement of users. The goal of designing these two applications in parallel is to test the benefits of the adaptive sampling approach in terms of battery and memory of phones when compared to a constant sampling. Once anonymized, the information collected is time-stamped, and periodically sent to the central servers for analysis and visualization. We have recruited volunteers of our team (i.e., a group of 8 people among students and collaborators). Collected data is available only for people involved on this deployment and only for research purposes and approach testing.

Users' community: Users mobility is leveraged by a number of services and applications (about 24% of Android application are built on top of mobility information): Waze, uber, blablaCar, on-line games, smart health applications, content providers (Netflix, google, facebook, twitter, flicker, etc), smart city applications (sport or cultural events, transportation systems, personalised touristic visits, safety applications).

Patent: We started with Inria the procedure for the registration of the patent named "Mobility Adaptive Location Sampling System for Mobile Devices".

Impact: Mobility-aware services and applications use a constant sampling that consumes a lot of battery. Our adaptive sampling approach will provide a more energy efficient way for mobility-aware services and applications execution, while collecting less mobility information from users [39]. A **patent** procedure has started at Inria.

2. Context-enhanced Trajectory Reconstruction (CTR) (2017-2018)

Software characterization: A-3; SO-4; SM-2; EM-2; SDL-2

Own contribution: DA-3, CD-1, MS-1, TPM-4

Implication: 30%.

Website: <https://gitlab.inria.fr/guchen/trajectory-reconstruction-tool>

People involved: G. Chen and M. Fiore

Lines of code: 8000

Description: This is the implementation of the strategy named Context-enhanced Trajectory Reconstruction, a new technique to fully complete individual CDR-based trajectories that hinges on tensor factorization as a core method, presented in [19]. The strategy is designed to be applied in Call Detail Records (CDRs) datasets. CDRs are logs of events (such as voice calls, text messages) generated during mobile communications. This completion strategy is to be applied in CDR having at least the following fields: userID, event time, and Cell Tower identifier/coordinates.

Users' community: Anyone interested in completing CDR datasets before their use for own purposes. Students from UFMG/Brazil are already using it.

Impact/Publication: [19], This work revealed (1) the importance of the spatio-temporal quality of the data sources and (2) the limitations of the use of incomplete CDRs in seminal literature mobility modeling works. Hence, it brought back very interesting research questions until now considered as settled. The CTR is the first technique existent to complete sparse CDR datasets. It is used by D. Teixeira in his work thesis.

3. MACACOApp Android application (2014-2016)

Software characterization: A-4; SO-3; SM-3; EM-3; SDL-4
Own contribution: DA-3, CD-1, MS-2, TPM-4
Implication: 15% **Website:** <https://macaco.inria.fr/macacoapp/>
People involved: T. Peng, K. Jaffres-Runser, K. Garg, A. Ferrari
Lines of code: 7630
Description: Mobile phone Android application that periodically samples phone's information on the mobility (through, e.g., GPS sensor, accelerometer and WiFi/Bluetooth/Cellular environment, connectivity type) and on the data traffic it generates (through, e.g., Internet browser history and applications data consumption). Once anonymized, the information collected is time-stamped, and periodically sent to the central servers for analysis and visualization. Users are also invited to fill a non-mandatory questionnaire relevant to this study. Our questionnaire collects information about the personality traits (Big5 model) and application preferences of people. User's application preferences and interests are inferred from the Internet browsing history and running app information obtained from the MACACO App.
Users' community: recruited volunteers of EU CHIST-ERA MACACO project have installed the app. Collected data is available only for EU CHIST-ERA MACACO partners, for research purposes.
Impact: Thanks to such application, we could collect very rich data from smartphones of volunteers (55 users) that was used at the following works: [6, 11, 13, 15, 31, 39]. Besides, MACACO dataset is being used in the thesis of: R. Lima Costa, L. Amichi, J. Batista Borges, and D. Teixeira.
4. MDTGen Simulator (2014-2015)

Software characterization: A-5; SO-4; SM-3; EM-4; SDL-1
Own contribution: DA-4, CD-2, MS-1, TPM-4
Implication: 30%
Website: <http://macaco.inria.fr/software/>
People involved: E. Muccelli R. Oliveira, K. P. Naveenb, Carlos Sarraute
Lines of code: 500
Description: This is a Synthetic Mobile Data Traffic Generator (MDTGen) presented in [63], capable of simulating traffic-related activity patterns for different categories of subscribers and time periods for a typical day in their lives. The generator was designed from real data from more than 6.8 million subscribers in Mexico City. We have first characterized individual subscribers' routinary behavior (i.e., "when" and "how much" traffic is generated). We have then classified the subscribers into six distinct profiles according to their usage patterns and modelled these profiles according to two daily time periods: peak and non-peak hours. Our generator takes then this profile modeling into account at the generation of data traffic for each synthetic subscriber per time period.
Users' community: The general community interested in testing solutions requiring the simulation of real mobile cellular data traffic of a large population.
Impact/Publications: [62, 63]; First synthetic mobile traffic generator leveraging regularity of data traffic of users. It is used in the thesis of V. Braga.
5. Yalut Android application (2013-2014)

Software characterization: A-5; SO-3; SM-3; EM-2; SDL-4
Own contribution: DA-3, CD-1, MS-1, TPM-2
Implication: 15%
Website: <http://www.yalut.com>
People involved: K. Thilakarathna, X. Guan, A. Seneviratne
Lines of code: 1809
Description: This application implements the content delivery system presented in our [92, 90, 93] papers. Yalut implements a distributed content sharing as an overlay service for popular centralized social networking services. Available for Android Smartphones, Mac and Windows desktop at the Google Play Store and at Yalut webpage. Presented in the demo session of ACM SIGMOBILE MobiSys 2014 [33] and got the Best Demo Award at IEEE iToF 2013 Demo and Poster Competition [89].
Users' community: The general public. Any application distribution and support is managed by NICTA.
6. Enhancement of Cognitive Radio Cognitive Network (CRCN) patch of NS-2 simulator (2010-2011)

Software characterization: A-5; SO-3; SM-2; EM-2; SDL-5
Own contribution: DA-2, CD-1, MS-1, TPM-2
Implication: 5%
People involved: M. H. Rehmani
Lines of code: 5000
Description: Enhancement of the Cognitive Radio Cognitive Network (CRCN) patch of NS-2 by adding a PR activity block to model activity of the primary radio (PR) nodes that support cognitive radio functionalities in NS-2, using C++. The CR mac layer was also modified to provide the capability to the CR network layer to make the channel selection

decision. As the main advisor of the PhD student, who developed this software (M. H. Rehmani), I advised him on the PR activity design and supervising results. Details on the CRCN modifications can be found in appendix B of his PhD Thesis: <https://tel.archives-ouvertes.fr/tel-00630214>.

Users' community: Cognitive Radio Network research community (i.e. users of NS-2 working on CRCN).

Impact/Publication: [78]; Incorporated at the network simulator version 2.0, so used by users who are interested in simulating Cognitive Radio Networks.

7. Implementation of the Random Walk-based simulator (2009)

Software characterization: A-1; SO-3; SM-1; EM-1; SDL-1

Own contribution: DA-4, CD-4, MS-4, TPM-4

Implication: 100%

People involved: A. Ziviani, R. Friedman

Description: Design and C implementation of a simple wireless sensor network simulator to validate our Random Walk-based approach presented in [106] and compare it with related work approaches. Implemented modules were: topology creation, message forwarding, and probabilistic packet collision. I performed the full design, coding, debugging, maintenance of the simulator as well as generated/plotted results.

Users' community: Own use of my research.

Impact/Publication: [106], used only by myself to generate results for this publication.

8. Implementation of the Hilbert-based trajectory design simulator (2008)

Software characterization: A-1; SO-3; SM-1; EM-1; SDL-1

Own contribution: DA-3, CD-4, MS-4, TPM-4

People involved: M. D. de Amorim

Description: Design a C implementation of a simple wireless simulator to validate our Hilbert-based trajectory design approach [7, 103] and compare it with related work approaches. Implemented modules were: topology creation, Hilbert curve design, message forwarding, probabilistic packet collision. I performed the full design, coding, debugging, and maintenance of the simulator as well as generated/plotted results.

Users' community: Own use of my research.

Impact/Publications: [7, 103], used only by myself to generate results for this publication.

4. Impact socio-économique et transfert / *Socio-economic impact and transfer*

1- Description du transfert:

Nature: Transfer of knowledge or of science (outside the academic community) through the GranData company.

Company description: [Grandata](#) is a San Francisco-based company that leverages advanced research in Human Dynamics (the application of “big data” to social relationships and human behavior) to identify market trends and predict customer actions. Leading Telecom and financial services firms are using Grandata’s Social Universe product to transform “big data” into business results. Their *Social Universe* product combines an easy-to-use visual experience with a powerful human dynamics engine to help business users identify market opportunities and key behavioral signals.

Transfer goal: For the time being, the collaboration with GranData has generated knowledge transfer. It describes an industrial partner’s collaboration having *the outcomes of our works impacting their products* (e.g., GranData data mining algorithms can be improved based on the better understanding on mobility and content consumption of mobile users) *or research/business decisions* (e.g., proved strong correlations between mobility and data traffic consumption can open new perspectives of services to telecom operators, i.e., clients of GranData). **Note that**, the impact mentioned here before comes from our jointly published outcomes and not our softwares or algorithms.

2- Transfer conditions:

Condition: NDAs have been signed for the access to their servers (located in Berkely, USA), where the datasets sources used in my research are stored. Those are fully anonymized datasets of telco operators (describing mobility, content generation of smartphone users), essential real environments to validate our solutions.

GranData is composed of PhD experts in security, privacy, and machine learning and have a strong collaboration with institutions in US (e.g., MIT, Berkeley) as well as in Europe (e.g., Inria Lyon and Saclay). With collaborations, GrandData tries to fill the gap of knowledge they have in some domains, such as mobile networking, while optimizing within the company the time spent in doing research. GranData (i.e., Carlos Sarraute) has been co-worker of two PhD students’ research activities (Guangshuo Chen and Eduardo Muccelli), which originated several publications (described in sec. 4 of Form 1).

There is also the big potential to have our algorithms incorporated in their product. This case has not still arrived, but if so, we will both Inria and GranData decide how to commercially exploit the common developed algorithms.

3- Personal contribution:

I met the Carlos Sarraute, the research director of GranData in March 2014, during the kickoff meeting of the STIC AmSud UCOOL project, I coordinated. I initiated the action during the STIC meeting which was followed by 2 skype meetings and a visit of two researchers of GranData to INRIA. We decided then the problem we would like to deal with and signed the NDA just after that (a new NDA is being prepared to update the last one signed). There was no difficulty in starting the collaboration since GranData was really interested in mobility and data traffic demand analysis of their datasets. Besides, involved GranData people are also researchers, so it was very simple to share motivations and ideas. We first characterized, analyzed, and profiled behavior of cellular network subscribers in terms mobility. This was the 1st characterization performed in their datasets, providing GranData with both a network (e.g., peak/non-peak hours, traffic consumption over week days) and social (e.g., gender and ages of subscribers) perspective of their datasets.

Then, in a 2nd work, we modelled content demand of mobile subscribers of a cellular network. The main outcome here for GranData was the capability of profiling the whole population of the datasets in 6 different profiles according to the way they consume (volume of traffic) and generate (activity behavior) data traffic. We have then studied spatiotemporal predictability of content demand of mobile subscribers and inferred temporal cell boundaries, i.e., when subscribers are in the vicinities of cellular antennas.

Finally, in a 3rd work, we have enhanced (or completed) human footprinting information in their sparse Call Detail Record datasets. This is one fundamental step in their algorithms relating on mobility studies from CDRs (a primary source of whereabouts in the study of multiple mobility-related aspects). In fact, CDRs document the details about when, where and how mobile phone subscribers generate voice calls or text messages, usually across remarkably large populations, but its sparsity often has an adverse impact on the dependability of study results: the incomplete mobility information from CDRs causes possible biases on characterizing mobility-related features.

4- Transfer impact:

The objectives of collaboration and knowledge transfer were achieved. I have the datasets I needed to perform my research and the collaboration is not ready to finish. From GranData side, through our analysis, they got new insights on datasets allowing them to better understand how subscribers behave in terms of mobility and content demand, to refine their algorithms, to improve their tools, or to allow them to design new services improving their business.

For the research community studying human mobility, our work on trajectory reconstruction [12] revealed important limitations of seminal literature works on human mobility and brought back very interesting research questions until now considered as settled: Having the potential to be of big impact on mobility investigation.

Targeted end users benefiting from the knowledge transfers would be the GranData itself. I have interlocutors inside GranData only.

Start-up funder (1998-2000, Goiânia, GO, Brazil) – Ápice Telemática.:

1- Description du transfer:

Nature: Transfer of knowledge (consulting) and technology (outside the academic community) through a startup company.

Company description: From 1998 to 2000, I was one of the owners of the start-up Ápice Telemática. It started at the Federal University of Goiás as an incubated small start-up. We quit the incubation at the University one year later. We were all really young and the main difficulty was to make clients (usually much older than us) believe on our capabilities. At the final of the 2nd year of the company, the owners were able to have a reasonable salary and pay one engineer. We were also getting to be known and our work recognized, despite our young age. I quitted the company in 2000 to start a M.Sc., after having decided to follow a research career.

2- Transfer conditions:

Consulting based on a contract between the start-up and clients. We have also participated (together with another company responsible for the infrastructure cabling project) to two national public-marked calls for the cabling and networking deployment in two government institutions: public hospital in Goiânia (GO) and SUPRAMA (Superintendence of the Manaus Free Trade Zone of Ministry of Industry, Foreign Trade and Services¹⁵) in Manaus (AM) both in Brazil. Customers included both public and private sector companies and institutions.

3- Personal contribution:

I had several different duties over the two years of the start-up:

- **Technical tasks:** included networking infrastructure design, deployment and management (e.g., ATM and Ethernet infrastructure were deployed). In particular, we were also required to convince clients about our infrastructure solutions, intended to better answering their needs.

¹⁵<http://site.suframa.gov.br/>

- **Administrative tasks:** included helping in the company business and team management (we were 6 in total) and technical/business negotiation.
- **Consulting tasks:** included studying client's needs for the network infrastructure planning, proposing technological avenues to meet their networking demands, and laying out detailed designs of the proposed solutions. As mentioned before, the main difficulty was to make clients (usually much older than us) believe on our capabilities, despite our young age.
- **Networking duties:** Once networking infrastructures were in place, I was responsible for the setup (I was the only one in the start-up with ATM background), configuration, and maintenance of the networking and computational platform
- **Technical training activities:** I have also provided training in computer network concepts (such as TCP/IP, Ethernet/Fast Ethernet, ATM, LAN Emulation, and Classical IP) and in the setup and configuration of ATM/Fast Ethernet Nortel Networks.

4- **Transfer impact:**

Customers included both public and private sector companies and institutions. The objectives of the company were achieved with success. I quit the company because I have decided to follow the research career.

Formulaire 2 — DESCRIPTION SYNTHÉTIQUE DE L'ACTIVITÉ ANTÉRIEURE

Form 2 — SUMMARY OF YOUR PAST ACTIVITY

My interests are in computer networks with emphasis on domains related to *mobile wireless networking, human behavior modeling, Internet of Everything (IoE), and smart cities*. My past activities can be structured around two main topics: (i) the *design of adaptive services and communication protocols* for wireless self-organizing networks (WSONs) and (ii) the *characterization and leveraging of human behavior* affecting resources or service usage in mobile internet edge networks. My research methodology favors the confrontation of proposed methods with real-world observations. Whenever appropriate, I apply techniques and tools from multiple areas, such as information theory, time series, statistics, and machine learning.

The primary goal of my research activities related to WSONs was to provide network-level support for successful data delivery. The central question driving my activities was: “*what are the networking services underlying the design of successful communication strategies in wireless self-organizing networking systems?*” To answer this question, the strategy was to introduce adaptation functionality to particular tasks performed by nodes (e.g., resource management) or inside the network (e.g., topology management) [82, 105, 107]. Then, following the new communication opportunities and the mobility tendency in wireless networks, my research activities gradually shifted to data dissemination and adaptive forwarding strategies in intermittently connected and opportunistic networks.

After 12 years working on WSONs and motivated by the impact brought by pervasive smart devices on our lives, I perceived the importance of better understanding the impact of user behaviors on network design and operation. To manage the complexity of the smart urban environments of tomorrow, I advocate such understanding has to become a intrinsic part of networking system/protocol/service design. Hence, my research activities since 2014 are centered on the deep understanding of the underlying mechanism and features explaining human behaviors, as well as on solutions leveraging the outcomes of such understanding.

ADAPTIVE SERVICES AND PROTOCOLS FOR WIRELESS SELF-ORGANIZING NETWORKS (2006-2014)

Wireless self-organizing networks have intrinsic characteristics (e.g., mobility, resource limitation, unreliable wireless communication) that require specific solutions and set them apart from traditional networks. The different types of WSONs (e.g., wireless sensor networks, vehicular ad hoc networks) require distributed and adaptive networking functionalities to deal with their dynamic nature and to find a fit between their operation and the environment. Hereafter, I summarize my efforts to tackle such requirements.

Topology management aims at shaping the network topology to achieve a certain objective, such as better connectivity, fault-tolerance, or energy management. In this context, our strategies modify the network topology:

- **Through node adaptation (1)** for network lifetime extension: *Contrarily to literature*, we have reduced nodes activity [58] (i.e., adjusting nodes duty cycle), while exploiting the absence of traffic in the active sensing state of devices; **(2)** for particular rule assignment to nodes: *Contrarily to related works*, we do not rely on any anchors, position-aware landmarks, or signal measurements [41, 42], and still generate lower communication overhead and require less computation power than related works;
- **Through controlled mobility** by taking advantage of the mobility of devices, our solutions guarantee the coverage of the target area while limiting the number of sensors in the monitored region (near the optimum). The originality of our proposal is that it *bounds the delivery delays of readings and monitoring overhead*, contrarily to other solutions in the literature [7, 73, 103].

Data management concerns *collection strategies* to correctly send data to central entities and *dissemination strategies* determining how data is propagated to destinations. The works here were very well acknowledged by the wireless networking community, as attested by the publications.

- Our solutions on **data collection** [54, 98, 104, 106] were *the first in the literature* to solve the problem of efficient data gathering in wireless sensor networks with mobile sinks performing free trajectory. We designed four different systems that had a significant impact on the field. **Fiche 4** details such contributions.
- Our **dissemination strategies** investigate **(1)** dissemination of report events to drivers inside a region of interest in highways [55] or urban [49, 50, 51] Vehicular Networks (VANETs). While related works solely focus on dense and connected scenarios, our dissemination solutions *seamlessly adapt to the road traffic conditions, operating in both connected and intermittently connected VANETs*. **Awards:** [50] was one of the top-rated papers in *A-ranked ACM MSWIM 2013* recommended to be published at a special issue of PEVA Elsevier journal [57]. **(2)** a community-based

greedy heuristic algorithm with novel dynamic centrality metrics (i) to well select a limited number of devices to carry the content and (ii) to leverage such selected devices to propagate the content to others via opportunistic communication [3, 4, 90, 91, 92]. Contrarily to the related literature, the fundamental challenge we tackled was to *minimize the number of replicas while ensuring high and timely availability* [90]. **Awards:** There was an implementation of [91] in the Yalut cloud service smartphone application, which received a Best Demo Award [33]. The Ph.D. student involved in this work received the Best Thesis Award (“Malcolm Chaikin Prize” at UNSW, Australia, 2015).

Adaptive forwarding dictates the quality of the selected route in routing protocols. Our protocols brought solutions to the challenge of matching forwarding decisions on-the-fly to different network dynamics (sparsity, node mobility, or disconnections), while respecting resource constraints. We designed thus Seeker [80, 81] and GrAnt [43, 99, 100, 101] protocols. Both protocols provide mechanisms to gather from network dynamics, information describing how promising nodes are as relays. While Seeker is based on *probabilistic forwarding decisions*, GrAnt suggests the use of *deterministic decision rules*. When compared to existing works in the literature, we show that our protocols can *adapt their forwarding accordingly in various connectivity scenarios* and achieve higher performance with lower overhead, while respecting buffer constraints. GrAnt was published at the *A-ranked ACM GECCO 2012* [100].

CHARACTERIZATION AND LEVERAGING HUMAN BEHAVIOR (since 2014)

More recently, I have been interested in studying the way people connect to, interact with, or impact mobile internet edge networks. I believe the understanding of *human behavior and their network interactions* have to become part integrant of networking solutions’ design. My main goals here are (1) to improve network perception on social norms/structure shaping the behavior of individuals within the network and (2) to accordingly provide the required support for smarter and human-aware decision-making in protocol/architecture/service design. My current contributions rely on the *characterization and modeling of human behaviors* (i.e., mobility, interactions or content demand) as well as on the leveraging of patterns of behaviors in *data offloading or trajectory reconstruction solutions*. Finally, the activities described hereafter gave me the first hints and motivations for my **Research Program of Form 4**.

Human behavior understanding: It concerns my investigations on (1) *human mobility patterns*, i.e., the analysis of properties and laws governing human motion; (2) *human wireless interactions*, i.e., the classification of types of human encounters according to their frequency and neighborhood overlapping; and (3) *per-individual content demand*, i.e., profiling of content demand of cellular network users as well as spatiotemporal prediction of traffic volume. **In (1)**, we were *the first to attest* relevant human motion properties (revealed in literature works) when using fine-grained datasets [59, 65, 60, 64]. Besides, more recently, we are extending such works with the investigation of an interpretable and extensible predictability [88]; of novelty-seeking mobility of individuals [1], and of anomaly and pattern change detection in mobility of individuals. **In (2)**, we investigated wireless encounters of users according to encounters’ regularity, similarity [67, 97], and centrality [2, 4, 95, 90, 92, 93]. **In (3)**, we were *the 1st to investigate and model* the per-user repetitive behavior (i.e., daily routines) in data consumption patterns [62, 63], which resulted at the design of a [synthetic mobile traffic generator](#), as well as its predictability [9, 18]. The outcomes of such works were leveraged at the design of strategies for: data offloading, hotspot deployment, adaptive mobility sampling [39], or trajectory reconstruction of coarse-grained datasets. **Fiche 1** details such contributions.

Data offloading solutions: where we exploit (1) *infrastructure deployment* or (2) *direct device-to-device opportunistic communication* as solutions to deal with the boost up of data consumption that is straining cellular network. Such solutions leveraged outcomes of our investigations on human behaviors. **In (1)**, we (i) tackle the deployment problem of hotspots in a metropolitan area, aiming to shift the traffic of cellular networks to WiFi networks [60] and (ii) study the periods in trajectories of users when offloading zones with good performance appear. **In (2)**, we exploit, whenever possible, the opportunistic communication between a few, important network devices to offload traffic from the cellular network [47, 2, 4, 95]. **Fiche 2** details such contributions.

Trajectory reconstruction and sampling: Call Detail Records (CDR datasets collected by telecom operators) are an important source of information for large-scale mobility studies. CDRs are often characterized by spatial and temporal sparsity, which, in turn, can bias mobility analyses based on such data. We were the *first in the literature (1) to investigate how such sparsity affects the accuracy and incompleteness of mobility information; (2) to assess the impact of such spatiotemporal sparsity in identifying important locations, in measuring individual movements, or in seminal literature studies analyzing human mobility properties; (3) to propose novel and effective techniques* to reduce temporal sparsity in CDR by leveraging regularity in human movement patterns [12, 20, 31, 32]. There is *no equivalent work in the literature*. Ph.D. students already use our strategies at the University of Porto (Portugal) and UFMG (Brazil). On the other hand, determining the frequency should one sample individual human movements so that they can be reconstructed from the collected samples with minimum loss of information, is still an open issue in literature. Our quest for a response unveils (i) seemingly universal spectral properties of human mobility, and (ii) a linear scaling law of the localization error with respect to the sampling interval [39]. **Fiche 3** details such contributions.

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