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# ANDRÉ PANISSON, PH.D.

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## PERSONAL INFORMATION

**Nationality:** Brazilian, Italian

**Resident of:** Turin, Italy

**Birth date:** July 20, 1978

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## EDUCATION

**PhD in Computer Science, University of Turin, Italy** **2009-2011**

Thesis: Selective Information Dissemination for Mobile Computing

Advisor: Prof. Giancarlo Ruffo

Co-advisor: Dr. Ciro Cattuto

**MSc in Computer Science, Federal University of Rio Grande do Sul, Brazil** **2004-2006**

Thesis: Balancing the Management Load using a P2P-Based Network Management Solution

Advisor: Dr. Maria Janilce B. Almeida

Co-advisor: Dr. Lisandro Zambenedetti Granville

**Bachelor's Degree in Computer Science, Federal University of Rio Grande do Sul, Brazil** **1999-2003**

Thesis: Implementation of a Search Algorithm with Traffic Control and Topology Adaptation for P2P-Based Networks

Advisor: Dr. Lisandro Zambenedetti Granville

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## EXPERIENCE

**Principal Researcher, Data Science Laboratory, ISI Foundation, Turin, Italy** **01/2012-present**

- Developed software tools (in Python, Java, C++) to measure, analyze, model and simulate the behavior of techno-social systems (online and physical social interactions, information spreading simulations).
- Contributed to the development of a variety of data exploration interfaces and methodologies to explore, represent, and communicate useful knowledge based on data ([datainterfaces.org](http://datainterfaces.org), [ebolatracking.org](http://ebolatracking.org)).
- Taught statistics, data analysis, machine learning and network science at BigDive ([www.bigdive.eu](http://www.bigdive.eu)).
- Contributed to a variety of open source projects, including the Twitter Elephant Bird library on GitHub.
- Contributed to industrial research collaborations in the area of healthcare for risk and behavioural analysis.
- Contributed to the SocioPatterns project – an active RFID social interaction sensing platform – in many capacities: developed the firmware for the active RFID devices with a Cortex M3 ARM controller, collected data from universities, hospitals and conferences, and visualized, analyzed, modeled and simulated such data.

**Fellow, Insight Data Science, Palo Alto, CA** **08/2012**

- Developed a product prototype (in Python, D3.js) that uses an augmented network of Twitter's following users to build a dynamic and interactive list of hot topics.

**PhD Student, University of Turin, Italy** **01/2009-12/2011**

- Developed tools (Python, Java) to analyze and simulate dynamic processes over mobile and ad-hoc networks.
- Developed recommender systems (in Python) for cross-context item recommendations ([www.salc-project.eu](http://www.salc-project.eu)), mobile devices ([is4mobi.di.unito.it](http://is4mobi.di.unito.it)) and Personal Video Recording, based on a single value decomposition technique that made use of implicit feedbacks.
- Created the Gephi Graph Streaming plugin for real-time visualization of dynamical networks (in Java).
- Taught courses in Fundamentals of Cryptography, Network Security, Complex Networks (Graph Visualization, Graph Layouts and Dynamical Networks).

**Consultant / Software Architect, Xeffe/ValueTeam, Turin, Italy** **08/2008-12/2011**

- Guided high-level design choices, devised technical standards and tools, and implemented parts of the VTPie payment banking system.
- Engineered the interfacing of legacy systems with open platforms, Java/J2EE and SOA architecture.
- Optimized complex Oracle queries using iBATIS and Spring to obtain a higher transaction throughput.

**Researcher, University of Turin (Project World Wide Style), Italy** **02/2008-12/2008**

- Developed a P2P recommender system in Java that exploits distributed collaborative filtering techniques to implement a fully decentralized resource sharing platform.

**Software Engineer, Public Ministry of the Rio Grande do Sul State, Brazil** **10/2002-01/2008**

- Analyzed software and programmed systems in Java/J2EE and PL/SQL; administered an Oracle database.

**PET (Special Training Program), Federal University of Rio Grande do Sul, Brazil** **01/2002-10/2002**

- Installed an IPv6 infrastructure for research purposes.
- Developed a P2P network management architecture for optical networks in the Brazilian RNP Giga backbone.

**NAVi (Virtual Learning Group), Porto Alegre, Brazil** **09/1999-01/2002**

Project at the Administration School, Federal University of Rio Grande do Sul, Brazil

- Developed a system (PHP, ASP) for E-Learning and Web Conferences that is still used by the Federal University of Rio Grande do Sul (navi.ea.ufrgs.br), and was applied as a patent (Brazilian INPI nr. 11.568-2).

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## TECHNICAL SKILLS

**Programming Languages:** Java\*, Python, C, C++, Oracle PL/SQL\*, UNIX shell scripts, HTML, JavaScript

**Concepts:** social and complex networks, mobile and ad-hoc networks, data science, machine learning, collaborative filtering and recommender systems, data collection and analysis, database systems, distributed systems, SciPy/NumPy, Pandas, Scikit-Learn, Cython, IPython, Django, Flask, OAuth, Hadoop, Spark, Eclipse, REST, WebSockets, WebServices, Peer-to-Peer, SOA, Oracle, MySQL, J2EE, JBoss, JMS, Struts, Spring, iBATIS

\* Training obtained in a certified training center

**Languages:** Portuguese (native), English (full professional proficiency), Italian (full professional proficiency)

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## PROJECTS AND RESEARCH ACTIVITIES

### **Complex Networks – SocioPatterns project (2009-present):**

Interdisciplinary research project that adopts a data-driven methodology with the aim of uncovering fundamental patterns in social dynamics and coordinated human activity. It does so by developing and deploying an experimental social interaction sensing platform, consisting of portable sensing device and software tools for aggregating, analyzing and visualizing the resulting data.

### **Datainterfaces (2010-present):**

Datainterfaces is a collaborative laboratory that aims to experiment with the development of interfaces and formats for the communication of data-rich scenarios. The laboratory stems from the collaboration between the Data Science Laboratory at ISI Foundation, the Communication Design Research Unit at the INDACO/Design Dept. of the Politecnico di Milano and the ARCS Group at the University of Torino.

### **Google Summer of Code (2010):**

In April 2010, a project proposal with the Gephi development team has been accepted for the Google Summer of Code program. The program is the best way for students around the world to start contributing to an open-source project. Gephi's project aims to bring the perfect tool for visualizing and manipulating networks, focusing on usability, performance and modularity.

### **RD-PVR: Recommendation & Discovery for Personal Video Recording (2009-2010):**

The goal of this project is to use events discretization combined with a collaborative filtering approach to make good predictions of user's registrations, in the Personal Video Recording services domain. The approach is based on the analysis of real data generated by the Faucet PVR system, integrated in a web-based podcasting.

**DeHunter (2008):**

DeHunter is a Peer-to-Peer (P2P) recommender system that exploits social filtering techniques to implement a fully decentralized resource sharing platform. The system provides to users a way to share, search and retrieve contents in a scalable, flexible and efficient way. The spontaneous relationships between users that show similar interests shape highly connected thematic clusters that can be exploited to provide personalized advices.

**GigaManP2P (2005-2007):**

This project proposes a novel peer-to-peer (P2P) management architecture for optical networks, focused initially on the new RNP Giga backbone. In the proposed architecture, peers provide, in a ubiquitous fashion, management information to modules that interface with both the optical infrastructure and network users.

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**TEACHING**

**Contract Professor, University of Turin** – Data Mining and Machine Learning, Laurea Magistrale in Fisica dei Sistemi Complessi, AA 2012/2013, AA 2013/2014, AA 2014/2015 and AA 2015/2016, Turin, Italy

**Big Dive** – a training program focused on Data Science, Development and Visualization, Oct 2012, June 2013, June 2014 and June 2015, Turin, Italy

**Fundamentals of Cryptography and Network Security** – Laboratory, University of Turin, VII Bando AA 2010/2011 art.33

**Complex Networks** – lessons about Graph Visualization, Graph Layouts and Dynamic Networks, Univ. of Turin

**Computer Security II** – Laboratory, University of Turin, VIII Bando AA 2011/2012 art.33

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**PRESENTATIONS**

**Exploring temporal graph data with Python: a study on tensor decomposition of wearable sensor data**  
PyData NYC 2015, November 10 2015, New York City, NY

**Introduction to Python Tools and Machine Learning**  
Complex Networks Thematic School, Les Houches, April 7-18, 2014

**Introduction to Data Science and Network Science**  
INEP Workshop on Big Data and Social Networks (Instituto Nacional de Estudos e Pesquisas), February 28 2014, Brasilia, Brazil

**Fusing Online and Face-to-Face Social Networks with Python and RFIDs**  
PyCon2013 – March 17 2013, Santa Clara, CA

**Fingerprinting temporal networks of close-range human proximity**  
International Workshop on the Impact of Human Mobility in Pervasive Systems and Applications (PerMoby 2014), March 18 2013, San Diego, CA

**Data-Driven Investigations of Dynamical Complex Networks**  
Seminar at Informatics Institute, Universidade Federal do Rio Grande do Sul, May 24 2013, Porto Alegre, Brazil

**Introduction to network visualization tools**  
Tensor Network States and Algebraic Geometry workshop, organized by ISI Foundation and Department of Mathematics, Penn State University. November 6-8, 2012, Turin, Italy

**On Collaborative Filtering Techniques for Live TV and Radio Discovery and Recommendation**  
Paper presented at the 12th International Conference on Electronic Commerce and Web Technologies (EC-Web 2011), Toulouse, France

**Understanding Information Spreading on Face-to-Face Contacts for Modeling Opportunistic/Delay-Tolerant Mobile Networks**

and **Gephi for dynamical networks**

Both presented at the Workshop on Data Driven Dynamical Networks, September 26 to October 1st, 2010, Les Houches, France

**Designing the Architecture of P2P-Based Network Management Systems.**

Paper presented at the IEEE Symposium on Computers and Communications (ISCC 2006), 2006, Pula-Cagliari.

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## PUBLICATIONS

- M.C. Kiti, M. Tizzoni, T.M. Kinyanjui, D.C. Koech, P.K. Munywoki, M. Meriac, L. Cappa, A. Panisson, A. Barrat, C. Cattuto, D.J. Nokes. **Quantifying social contacts in a household setting of rural Kenya using wearable proximity sensors.** EPJ Data Science 5.1: 1-21 (2016)
- M.G. Beiró, A. Panisson, M. Tizzoni, C. Cattuto. **Predicting human mobility through the assimilation of social media traces into mobility models.** arXiv preprint arXiv:1601.04560 (2016)
- A. Sapienza, A. Panisson, J. Wu, L. Gauvin, C. Cattuto. **Detecting anomalies in time-varying networks using tensor decomposition.** Proc. 5th IEEE ICDM Workshop on Data Mining in Networks (2015)
- C. Levallois, M. Marchand, T. Mata, A. Panisson. **Twitter for Research Handbook**, EMLYON Press, 2015.
- A. Sapienza, A. Panisson, J. Wu, L. Gauvin, C. Cattuto. **Anomaly Detection in Temporal Graph Data: An Iterative Tensor Decomposition and Masking Approach.** Proc. 1st International Workshop on Advanced Analytics and Learning on Temporal Data (AALTD 2015), (2015)
- P. Bajardi, M. Delfino, A. Panisson, G. Petri, M. Tizzoni. **Unveiling patterns of international communities in a global city using mobile phone data.** EPJ Data Science 4, no. 1 (2015): 1-17.
- L. Gauvin, A. Panisson, A. Barrat, C. Cattuto. **Revealing latent factors of temporal networks for mesoscale intervention in epidemic spread.** arXiv preprint arXiv:1501.02758(2015).
- A. Panisson, L. Gauvin, M. Quaggiotto, C. Cattuto. **Mining Concurrent Topical Activity in Microblog Streams.** Proc. of the the 4th Workshop on Making Sense of Microposts, co-located with the 23rd Intl. World Wide Web Conference (WWW 2014), Seoul, Korea, April 2014 (Best Paper Award).
- L. Gauvin, A. Panisson, C. Cattuto. **Detecting the community structure and activity patterns of temporal networks: a non-negative tensor factorization approach.** PLOS ONE 9.1 (2014): e86028.
- L. Gauvin, A. Panisson, C. Cattuto, A. Barrat. **Activity clocks: spreading dynamics on temporal networks of human contact.** Scientific Reports, v. 3, p. 3099, 2013.
- C. Cattuto, M. Quaggiotto, A. Panisson, A. Averbuch. **Time-varying social networks in a graph database.** In: First International Workshop on Graph Data Management Experiences and Systems - GRADES '13. New York: ACM Press, 2013.
- A. Panisson, L. Gauvin, A. Barrat, C. Cattuto. **Fingerprinting temporal networks of close-range human proximity.** Intl. Workshop on the Impact of Human Mobility in Pervasive Systems and Applications (PerMoby 2013), March 18 2013, San Diego, CA
- A. Panisson, A. Barrat, C. Cattuto, G. Ruffo, R. Schifanella. **On Human Proximity Dynamics for Data Diffusion through Ad-Hoc Networks.** Ad Hoc Networks, Special Issue on Social-Based routing in Mobile and Delay-Tolerant Networks. Volume 10, Issue 8, November 2012, Pages 1532-1543
- C. Melchior, D. T. Mattjie, C. R. P. dos Santos, A. Panisson, L. Z. Granville and L. M. Tarouco. **A P2P-Based Strongly Distributed Network Polling Solution.** Advancements in Distributed Computing and Internet Technologies: Trends and Issues. IGI Global, 2012. 289-313.
- A. Basso, M. Milanesio, A. Panisson, G. Ruffo. **On Collaborative Filtering Techniques for Live TV and Radio Discovery and Recommendation.** In Proc. of the 12th International Conference on Electronic Commerce and Web Technologies (EC-Web 2011), Toulouse, France, August 29 - September 2, 2011.
- A. Basso, M. Milanesio, A. Panisson. **From Recordings to Recommendations: Suggesting Live Events in the DVR Context.** In RecSys 2010: Proc. of the International Workshop on the Practical Use of Recommender Systems, Algorithms and Technologies, Barcelona, Spain, 30 September 2010.

- Basso, M. Milanese, A. Panisson. **Social Aspects of Video Recording**. In AISB10: Proc. of the Thirty Sixth Annual Convention of the Society for the Study of Artificial Intelligence and Simulation of Behaviour, Leicester, UK, 29 March - 1 April 2010.
- C. Melchior, A. H. dos Santos, D. Mattjie, C. R. dos Santos, A. Panisson, L. Z. Granville, L. M. R. Tarouco. **A network polling solution through a P2P-based distributed management environment**. In SAC '10: Proceedings of the 2010 ACM Symposium on Applied Computing (Sierre, Switzerland, March 22 - 26, 2010). ACM, New York, pp. 729-730.
- R. Schifanella, A. Panisson, C. Gena and G. Ruffo. **MobHinter: Epidemic Collaborative Filtering and Self-Organization in Mobile Ad-Hoc Networks**. In RecSys 2008: Proceedings of the 2nd ACM Intern. Conf. on Recommender Systems, October 23-25, 2008, Lausanne, Switzerland. ACM Press.
- C. C. Marquezan, A. Panisson, L. Z. Granville, G. Nunzi, M. Brunner. **Maintenance of Monitoring Systems Throughout Self-Healing Mechanisms**. In DSOM 2008: Proceedings of the 19th IFIP/IEEE International Workshop on Distributed Systems: Operations and Management, 22-26 September 2008, Samos Island, Greece, pp. 176-188, 2008.
- A. Panisson, G. Ruffo, and R. Schifanella. **X-hinter: a framework for implementing social oriented recommender systems**. In HT '08: Proceedings of the Nineteenth ACM Conference on Hypertext and Hypermedia (Pittsburgh, PA, USA, June 19 - 21, 2008). ACM, New York, NY, p. 235-236, 2008.
- A. Panisson, D. M. Rosa, C. Melchior, L.Z. Granville, M. J. B. Almeida, L. M. R. Tarouco. **Designing the Architecture of P2P-Based Network Management Systems**. In ISCC2006: Proceedings of the 2006 IEEE Symposium on Computers and Communications. p. 69-75, 2006.
- L. Z. Granville, D. M. Rosa, A. Panisson, C. Melchior, M. J. B. Almeida, L. M. R. Tarouco. **Managing Computer Networks Using Peer-to-Peer Technologies**. IEEE Communications Magazine, v. 43, n. 10, p. 62-68, 2005.
- A. Panisson, M. J. B. Almeida, L. M. R. Tarouco, L. Z. Granville. **Implementação de um Algoritmo para Busca em Redes Peer-to-Peer. (Implementation of a Search Algorithm for P2P Networks)**. In: Proc. of the Brazilian Workshop on Peer-to-Peer Systems (WP2P2005), 2005, Fortaleza. v. 1. p. 25-36.