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CENTAI Institute
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PERSONAL INFORMATION

Nationality: Brazilian, Italian

Resident of: Turin, Italy

Birth date: July 20, 1978

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

EXPERIENCE

Principal Researcher, CENTAI Institute, Turin, Italy 2022-

- Worked on the definition, coordination, and execution of foundational and industrial research projects in domains related to Artificial Intelligence and Complex Systems sciences.

Research Scientist, Data Science Laboratory, ISI Foundation, Turin, Italy 2012-2016

Senior Research Scientist, ISI Foundation, Turin, Italy 2016-2022

- 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, ebolatracking.org).
- Taught statistics, data analysis, machine learning and network science at BigDive (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), mobile devices (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).

TECHNICAL SKILLS

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

Concepts: artificial intelligence, machine learning, responsible artificial intelligence, data science, social and complex networks, mobile and ad-hoc networks, collaborative filtering and recommender systems, data collection and analysis, database systems, distributed systems, Tensorflow, PyTorch, Jupyter, SciPy/NumPy, Pandas, Scikit-Learn, Cython, Hadoop, Spark, SQL, Oracle, MySQL.

* Training obtained in a certified training center

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

TEACHING

Data Mining: Statistical Modeling and Learning from Data, 2013 – 2024, Department of Physics, University of Turin, Italy.

Data Mining: Statistical Modeling and Learning from Data, Computer Science Department of ENS Lyon, January 2016, Lyon, France

Big Dive – a training program focused on Data Science, Development and Visualization, Oct 2012, June 2013, June 2014, June 2015 and June 2016, 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

PUBLICATIONS

- S. Pasteris, F. Vitale, M. Herbster, C. Gentile, A. Panisson. **Adversarial Online Collaborative Filtering**. In Proceedings of the 35th International Conference on Algorithmic Learning Theory (AALT 2024). (2024)
- A. Battiston, L. Napoli, P. Bajardi, A. Panisson, A. Perotti, M. Szell, R. Schifanella. **Revealing the determinants of gender inequality in urban cycling with large-scale data**. EPJ Data Science. 12(1): 9 (2023)
- C. Borile, A. Perotti, A. Panisson. **Evaluating Link Prediction Explanations for Graph Neural Networks**. In: Explainable Artificial Intelligence. xAI 2023. Communications in Computer and Information Science, vol 1902. (2023)
- F. Dibitonto, F. Garcea, A. Panisson, A. Perotti, L. Morra, L. **HOLMES: HOLonym-MERonym Based Semantic Inspection for Convolutional Image Classifiers**. In: Explainable Artificial Intelligence. xAI 2023. Communications in Computer and Information Science, vol 1902. (2023)
- A. Perotti, S. Bertolotto, E. Pastor, A. Panisson. **Beyond One-Hot-Encoding: Injecting Semantics to Drive Image Classifiers**. In: Explainable Artificial Intelligence. xAI 2023. Communications in Computer and Information Science, vol 1902, 525-548. (2023)
- A. Perotti, P. Bajardi, F. Bonchi, A. Panisson. **Explaining Identity-aware Graph Classifiers through the Language of Motifs**. Proceedings of the 2023 International Joint Conference on Neural Networks (IJCNN). (2023)
- J. Lenti, Y. Mejova, K. Kalimeri, A. Panisson, D. Paolotti, M. Tizzani, M. Starnini. **Global Misinformation Spillovers in the Vaccination Debate Before and During the COVID-19 Pandemic: Multilingual Twitter Study**. JMIR Infodemiology. 2023 May 24;3:e44714. (2023)
- A. Capozzi, G. D. F. Morales, Y. Mejova, C. Monti, and A. Panisson. **The Thin Ideology of Populist Advertising on Facebook during the 2019 EU Elections**. In Proceedings of the ACM Web Conference 2023 (WWW '23). (2023)
- S. Piaggese, A. Panisson, & G. Petri. **Effective Higher-order Link Prediction and Reconstruction from Simplicial Complex Embeddings**. In Learning on Graphs Conference (pp. 55-1). PMLR. (2022)
- S. Piaggese & A. Panisson. **Time-varying graph representation learning via higher-order skip-gram with negative sampling**. EPJ Data Science, 11(1), 33. (2022)
- C. Rollo, G. De Francisci Morales, C. Monti, & A. Panisson. **Communities, Gateways, and Bridges: Measuring Attention Flow in the Reddit Political Sphere**. In Social Informatics: 13th International Conference, SocInfo 2022, Glasgow, UK, October 19–21, 2022, Proceedings (pp. 3-19). (2022)
- G. Crupi, Y. Mejova, M. Tizzani, D. Paolotti, and A. Panisson. **Echoes through time: Evolution of the italian covid-19 vaccination debate**. In Proceedings of the International AAAI Conference on Web and Social Media (Vol. 16, pp. 102-113). (2022)
- S. Giurgola, S. Piaggese, M. Karsai, Y. Mejova, A. Panisson & M. Tizzoni. **Mapping urban socioeconomic inequalities in developing countries through facebook advertising data**. Frontiers in big Data, 5. (2021)
- C. Panigutti, A. Perotti, A. Panisson, P. Bajardi, & D. Pedreschi. **FairLens: Auditing black-box clinical decision support systems**. Information Processing & Management, 58(5), 102657. (2021)
- E. G. Amparore, F. Cinus, C. Maestri, L. Petrocchi, D. Polinelli, F. Scarpa, A. Perotti, A. Panisson, P. Bajardi. **Forecast of Distributed Energy Generation and Consumption in a Partially Observable Electrical Grid: A Machine Learning Approach**, 2021 IEEE Madrid PowerTech, pp. 1-6. (2021)
- M. Starnini, C. E. Tsourakakis, M. Zamanipour, A. Panisson, W. Allasia, M. Fornasiero, L. Li Puma, V. Ricci, S. Ronchiadin, A. Ugrinoska, M. Varetto, D. Moncalvo. **Smurf-Based Anti-money Laundering in Time-Evolving Transaction Networks**. Joint European Conference on Machine Learning and Knowledge Discovery in Databases. Springer, Cham. (2021)

- A. Capozzi, G. De Francisci Morales, Y. Mejova, C. Monti, A. Panisson, & D. Paolotti. **Clandestino or Rifugiato? Anti-immigration Facebook Ad Targeting in Italy**. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (pp. 1-15). (2021)
- F. Poletto, Y. Zhang, A. Panisson, Y. Mejova, D. Paolotti, & S. Ponsérre. **Developing Annotated Resources for Internal Displacement Monitoring**. In Companion Proceedings of the Web Conference 2021 (pp. 136-144). (2021)
- A. Capozzi, G. De Francisci Morales, Y. Mejova, C. Monti, A. Panisson, & D. Paolotti. **Facebook Ads: Politics of Migration in Italy**. In International Conference on Social Informatics (pp. 43-57). (2020)
- N. Gozzi, M. Tizzani, M. Starnini, F. Ciulla, D. Paolotti, A. Panisson, & N. Perra. **Collective response to media coverage of the COVID-19 pandemic on Reddit and Wikipedia: mixed-methods analysis**. Journal of medical Internet research, 22(10), e21597. (2020)
- F. Cinus, F. Bonchi, C. Monti, A. Panisson. **Generating Realistic Interest-Driven Information Cascades**. In Proc. of the International AAAI Conference on Web and Social Media (Vol. 14, pp. 107-118). (2020)
- M. Tizzoni, A. Panisson, D. Paolotti, C. Cattuto. **The impact of news exposure on collective attention in the United States during the 2016 Zika epidemic**. PLoS computational biology 16 (3), e1007633 (2020)
- B. Edizel, F. Bonchi, S. Hajian, A. Panisson, T. Tassa. **FaiRecSys: Mitigating algorithmic bias in recommender systems**. International Journal of Data Science and Analytics, 9(2), 197-213. (2020)
- D. Balsamo, P. Bajardi, A. Panisson. **Firsthand Opiates Abuse on Social Media: Monitoring Geospatial Patterns of Interest Through a Digital Cohort**. In Proceedings of the 2019 World Wide Web Conference. (2019)
- S. Piaggese, L. Gauvin, M. Tizzoni, C. Cattuto, N. Adler, S. Verhulst, A. Panisson. **Predicting City Poverty Using Satellite Imagery**. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (pp. 90-96). (2019)
- B. Gobbo, D. Balsamo, M. Mauri, P. Bajardi, A. Panisson, P. Ciuccarelli. **Topic Tomographies (TopTom): a visual approach to distill information from media streams**. In Computer Graphics Forum (Vol. 38, No. 3, pp. 609-621). (2019)
- L. Ozella, L. Gauvin, L. Carenzo, M. Quaghiotto, P.L. Ingrassia, M. Tizzoni, A. Panisson, D. Colombo, A. Sapienza, K. Kalimeri, F. Della Corte, C. Cattuto. **Wearable proximity sensors for monitoring a mass casualty incident exercise: a feasibility study** Journal of medical internet research 21 (4), e12251 (2019)
- 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**. EPJ Data Science, 5:30 (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).

- M. Géniois, C.L. Vestergaard, J. Fournet, A. Panisson, I. Bonmarin, A. Barrat. **Data on face-to-face contacts in an office building suggest a low-cost vaccination strategy based on community linkers.** *Network Science*, 3(03), 326-347, (2015)
- A. Panisson, L. Gauvin, M. Quaggitto, C. Cattuto. **Mining Concurrent Topical Activity in Microblog Streams.** Proc. of 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. Quaggitto, 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. Melchioris, 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. Milanesio, 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. Melchioris, 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.