

Julien Herzen

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20 Sep. 1984
Swiss citizenship

EDUCATION

Ph.D. (2015) in Communication Systems

Flexible Spectrum Assignment for Local Wireless Networks
École Polytechnique Fédérale de Lausanne (EPFL)

BSc. (2007) and MSc. (2009) in Communication Systems

With Specialization *Networking And Mobility*
École Polytechnique Fédérale de Lausanne (EPFL)

PROFESSIONAL EXPERIENCE

Engineering Lead, February 2018 - present

Swisscom, Data, Analytics & AI department

- Product Owner for Swisscom Mobility Insights Platform
- Product Owner for Swisscom Open Data (opendata.swisscom.com)
- Devising algorithms, software, and writing production-grade code (mainly in Scala)
- Organizing work for a team of data engineers/scientists, technical strategy, recruitment, etc

Senior Data Scientist, October 2015 - January 2018

Swisscom, Innovations department

- Devised and implemented new algorithms to transform mobile-network data into mobility statistics, at the scale of the country
- Built real-time data analytics pipelines using Big Data technologies
- Built a machine-learning system for real-time detection of outages in Swisscom network
- Deputy team lead

PhD student, September 2010 - September 2015

EPFL, LCA lab, under the supervision of Prof. Patrick Thiran

- Design, implementation and mathematical modelling of different network algorithms (self-organizing, routing, scheduling, graph algorithms).
- Application and design of data analytics and machine learning techniques to various problems

Visiting Researcher, September - December 2012

Technicolor Research Labs, Paris

- Work on adaptive resource allocation algorithms

Keywords: Machine learning, Testbed experiments, Simulation, Analysis

Visiting Researcher, July - September 2011

Deutsche Telekom, T-Labs, Berlin

- Work on spectrum-assignment algorithms

Keywords: WLANs, Home networks, Self-organization, Testbed experiments, Simulation, Analysis

Visiting Researcher, February - August 2009

DoCoMo USA Labs, Palo Alto CA

- Master thesis on scalable routing algorithms using virtual coordinates

Keywords: Random graphs, Graph embedding, Scalability, Simulation

SELECTED PUBLICATIONS (complete list available: <http://www.hrzn.ch>)

- C. Vlachou, A. Banchs, P. Salvador, **J. Herzen**, P. Thiran. **Analysis and Enhancement of CSMA/CA with Deferral in Power-Line Communications**. in *Journal of Selected Areas in Communications (JSAC)*, 2016
- C. Vlachou, A. Banchs, **J. Herzen**, P. Thiran. **How CSMA/CA with Deferral Affects Per-**

formance and Dynamics in Power-Line Communications. in *IEEE/ACM Transactions on Networking*, 2016

- **J. Herzen**, A. Banchs, V. Shneer, P. Thiran. **CSMA/CA in Time and Frequency Domains.** in *IEEE ICNP*, 2015
Summary available: <http://hrzn.ch/tfcsmaca/tfcsmaca.html>
- **J. Herzen**, H. Lundgren, N. Hegde. **Learning Wi-Fi Performance.** in *IEEE SECON*, 2015
- V. Etter, **J. Herzen** (co-first author), M. Grossglauser, P. Thiran. **Mining Democracy.** in *ACM COSN*, 2014
★ **Best paper award** – Featured in phys.org, epfl.ch, Scientific Computing, ACM Technews
- C. Vlachou, A. Banchs, **J. Herzen**, P. Thiran. **On the MAC for Power-Line Communications: Modeling Assumptions and Performance Tradeoffs.** in *IEEE ICNP*, 2014
★ **Best paper runner-up award**
- C. Vlachou, A. Banchs, **J. Herzen**, P. Thiran. **Analyzing and Boosting the Performance of Power-Line Communication Networks.** in *ACM CoNEXT*, 2014
- **J. Herzen**, R. Merz, P. Thiran. **Distributed Spectrum Assignment for Home WLANs.** In *IEEE Infocom*, 2013
★ Featured in Gizmodo, Engadget, phys.org, epfl.ch
- **J. Herzen**, C. Westphal, P. Thiran. **Scalable Routing Easy as PIE: a Practical Isometric Embedding Protocol.** In *IEEE ICNP*, 2011
- A. Aziz, **J. Herzen**, R. Merz, S. Shneer, P. Thiran. **Enhance & Explore: an Adaptive Algorithm to Maximize the Utility of Wireless Networks.** In *ACM MobiCom*, 2011
- **J. Herzen**, A. Aziz, R. Merz, S. Shneer, P. Thiran. **A Measurement-Based Algorithm to Maximize the Utility of Wireless Networks.** In *ACM S3*, 2011

PATENTS

- J. Herzen, A. Banchs, V. Shneer, P. Thiran. CSMA/CA in Time and Frequency Domain. US Patent App. 15/604486 (pending)
- J. Herzen, R. Merz and P. Thiran. Method to optimize the communication parameters between an access point and at least one client device. US Patent US9549328B2 (granted).
- H. Lundgren, J. Herzen and N. Hegde. Spectrum allocation in a wireless network. US and European; US9844056B2 (granted).

PROFESSIONAL SERVICES

- Reviewer for IEEE Transactions on Networking, Transactions on Mobile Computing, Transactions on Wireless Communications, Internet Computing and Elsevier Computer Networks
- External reviewer for ACM Sigcomm, CoNEXT, Sigmetrics and IEEE Infocom, Secon
- TPC member of the ACM S3 2012 workshop

ACADEMIC EXPERIENCE

Teaching assistant for several classes at EPFL:

- TCP/IP Networking (MSc)
- Dynamical Systems Theory (MSc)
- C/C++ programming (BSc)
- Calculus (BSc)

Supervised several student projects on network algorithms, data mining and social networks:

- 3 Master theses – 30 ECTS (Sébastien Epiney, Alexandre Becholey, Khue Vu)
- 7 Master semester projects – 12 ECTS (Zhu Jiahang, Grégory Moix, Gorica Tapandjieva, Pierre Pfister, Hannah Muckenhirn, Bernard Gütermann, Victor Kristof)

DATA SCIENCE

Machine learning (supervised & unsupervised), Markov random fields, Probabilistic inference, Neural Networks, Time series analysis, graph algorithms, ...

COMPUTER SKILLS

Python, Scala, Java, C/C++ , Linux, Hadoop, Spark (batch & streaming), Cassandra, network & concurrent programming, numerical computing (numpy, scipy, sklearn, matplotlib, Matlab), git, L^AT_EX, ...

LANGUAGES

French	mother tongue
English	strong knowledge
German	basic knowledge