Nicolas Gensollen

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INTERESTS

I am a **computer science researcher** currently working as a postdoc in the *complex networks* team at LIP6 in Paris. My main research interests are: complex networks, temporal networks, anomaly detection, blockchain-based applications, smart-grids, optimization and heuristics. I also have a strong interest in contributing to open source projects. More information on my website: https://nicolasgensollen.github.io.

EXPERIENCE

LIP6, *Postdoc* Dec 2018 - Now

Postdoc in the *Complex Networks* team, at LIP6, Sorbonne University. Working on anomaly detection in large streams of interactions using a link stream based approach.

NREL, *Postdoc* Mar 2017 - Nov 2018

Power System Design and Studies group. Main projects: Approximate Dynamic Programming for Distribution Planning (2017), Large scale synthetic distribution systems generation (2017-2018), decision tool for target hosting capacity problems.(2017-2018)

PIERRE AND MARIE CURIE UNIVERSITY, *Monitorat* Oct 2013 - Oct 2016

Monitorat at Pierre et Marie Curie University (UPMC). 64h per year for 3 years (see teaching section for more details).

TELECOM SUDPARIS, *Research Engineer* Nov 2012 - Sep 2013

Development of the "smart-grid"research component of SAMOVAR (UMR 5157).
Wrote several Master and PhD proposals including my own PhD. subject.

CONSEIL GENERAL 77, *Intern* Jul 2011 - Jan 2012

Development of a scenario-pricing tool for Optical fiber deployment in the French Seine-et-Marne region. The tool enabled the automatic pricing of customized deployment scenarios to help local politics finding the most effective deployment strategy.

EDUCATION

PHD. COMPUTER SCIENCE Oct 2013 - Oct 2016

Telecom SudParis

PhD fellowship awarded by Telecom SudParis.
Telecommunications Networks and Services Department, Mines-Telecom Institute, CEA Saclay Nano-Innov.
Advised by: Vincent Gauthier,Michel Marot, and Monique Becker.
Thesis: *Modeling and Optimizing a Distributed Power Network: A Complex System Approach of the Prosumer Management in the Smart Grid*
Defense date: 7th October 2016

ENGINEER DEGREE - TELECOMMUNCATION Sep 2009 - Sep 2012

Telecom SudParis

Telecommunication engineer student, Telecom SudParis, Evry, France.
Last year option: Networking.
Advised by Laurent Bernard and Eric Gangloff.

SKILLS

Languages:

Native Speaker
Professional
Conversational level

Programming languages:

Scripting: Python, Julia, Matlab
Web: HTML, CSS, PHP, JavaScript
Others: C, C#, Visual Basics

Selection of favorite tools:

CI and Testing: Git, GitHub, GitLab, Travis, CodeCov, PyTest, Docker, Jenkins
Writing and Documentation: LaTeX, Overleaf, Markdown, Sphinx, Documenter.jl
Data Bases: MySQL, PostgreSQL, MongoDB, PostGIS, SQLAlchemy, JuliaDB
Machine Learning: Scikit-learn, TensorFlow, PyTorch, Flux.jl, Knet.jl
Optimization: Scipy, Pyomo, JuMP
Graphs: NetworkX, NetworKit, igraph, Gephi, LightGraphs.jl
Parallel Computing: Dask, Moab, TORQUE, Spark
Power System Modeling: OpenDSS, CYME, Synergi, DEW

OPEN SOURCE MAIN CONTRIBUTIONS

2019 **StreamGraphs.jl:** Julia package to work with stream graphs and link streams.
Currently under development at LIP6.
https://github.com/NicolasGensollen/StreamGraphs.jl

2018 **Santa-Fe Synthetic Network:** Large-scale synthetic distribution and sub-transmission dataset based on building and streetmap data for Santa Fe, New-Mexico, USA.
Produced using RNM-US as part of the NREL-MIT-Comillas-CYME-EDD Smart-DS Arpa-e project.
https://item.bettergrids.org/handle/1001/413

2018 **DiTTo (Distribution Transformation Tool):** aims at providing an open source framework to convert various distribution system modeling formats.
First, and currently only open source, tool to provide these capabilities.
Developed and maintained by NREL.
Main users: NREL (various projects), UC Berkeley, Opusonesolutions, Eaton (CYME)...
https://github.com/NREL/ditto

2017 **The Power Grid Dataset:** Dataset of topologies of real power grid systems.
Developed at Telecom SuParis.
https://github.com/ComplexNetTSP/Power_grids

TEACHING AND ADVISING

2019 Introduction to the modeling of dynamical systems (UPMC, ARE, L1), coordinator: Nicolas Maudet. 40 hours

2016 Mentoring Master student M. Lester Padilla on *Reconstructing the European Power Grid from OpenstreetMap data*. Apr. 2016 - Sept. 2016.

2016 Monitorat at UPMC. Programming basics in Python (L1), coordinator: Fabien Tarissan
Python programming (M1). 64 hours

2015 Monitorat at UPMC. C programming project (L3), coordinator: Xavier Clady,
Artificial Intelligence for 2 players games (L2), coordinator: Sylvain Lamprier. 64 hours

2014 Monitorat at UPMC. TCP/IP Networking (M1), coordinator: Promethee Spathis,
C programming project (L3), coordinator: Xavier Clady. 64 hours

PUBLICATIONS

Conferences

2019 Nicolas Gensollen, Matthieu Latapy
Interplay between social and financial interactions in a crypto-currency,
Presented at MARAMI 2019 in Dijon, France.

2019 Akshay Kumar Jain, Kelsey Horowitz, Fei Ding, Nicolas Gensollen, Barry Mather, and Bryan Palmintier,
Quasi-Static Time Series PV Hosting Capacity Methodology and Metrics,
Presented at the 2019 IEEE Conference on Innovative Smart Grid Technologies (ISGT) in Washington D.C.

2018 Nicolas Gensollen, Kelsey Horowitz, Bryan Palmintier, Fei Ding, and Barry Mather,
Beyond Hosting Capacity: Using Shortest Path Methods to Minimize Upgrade Cost Pathways,
Presented at the 7th World Conference on Photovoltaic Energy Conversion (WCPEC-7) in Waikoloa

2016 Nicolas Gensollen, Vincent Gauthier, Michel Marot, Monique Becker,
Submodular Optimization for Control of Prosumer Networks,
Presented at the 2016 IEEE SmartGridComm in Sydney.

2015 Nicolas Gensollen, Monique Becker, Vincent Gauthier, Michel Marot,
Coalition Formation Algorithm of Prosumers in a Smart Grid Environment,
Presented at the 2015 IEEE International Conference on Communications (ICC) in London.

Journals

2019 Nicolas Gensollen, Matthieu Latapy
Do you trade with your friends or become friends with your trading partners?
A case study in the G1 cryptocurrency,
Submitted to Applied Network Science.

2019 Nicolas Gensollen, Kelsey Horowitz, Bryan Palmintier, Fei Ding, and Barry Mather,
Beyond Hosting Capacity: Using Shortest Path Methods to Minimize Upgrade Cost Pathways,
IEEE Journal of Photovoltaics, vol. 9, issue 4, 2019

2018 Nicolas Gensollen, Vincent Gauthier, Michel Marot, Monique Becker,
Stability and Performance of Coalitions of Prosumers Through Diversification in the Smart Grid,
IEEE Transactions on Smart Grid, vol.9, issue 2, 2018