

# Benjamin Girault

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Date of Birth: June 17, 1987 (29 y.o.)  
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## Employment

Postdoctorate in Electrical Engineering, USC, Los Angeles California, USA, 2016-

*Principal Investigators:* Pr. Antonio Ortega and Pr. Shrikanth S. Narayanan  
*Subject:* Graph Signal Processing

PhD in Computer Science, ENS de Lyon, Lyon, FRANCE, 2012-2015

*Supervisors:* Éric Fleury and Paulo Gonçalves  
*Subject:* Signal Processing on Graphs – Contributions to an Emerging Field  
*Graduation:* 1st December 2015  
*Scientific courses:*

**2012-2013:** Outils pour l'analyse de données (34h)

*Software production:* GraSP (**Graph Signal Processing**) toolbox for Matlab (in preparation for publication)

Teaching Assistant in Computer Science, ENS de Lyon, Lyon, FRANCE, 2012-2015

**2014-2015** – ACM Preparation (practical course of solving algorithmic problems using ACM-ICPC problems), L3 (Professor: Éric Thierry) [21 hours]  
**2013-2015** – Software project management, M1 (Professor: Eddy Caron) [72 hours]  
**2012-2014** – Optimization, M1 (Professor: Stéphan Thomassé) [48 hours]  
**2012-2013** – Project 2 (Implementation of a SAT Solver), L3 (Professor: Daniel Hirschhoff) [32 hours]

## Publications

### *International Journal*

Benjamin Girault, Paulo Gonçalves, and Éric Fleury. Translation on Graphs: An Isometric Shift Operator. *Signal Processing Letters, IEEE*, 22(12):2416–2420, Dec 2015

### *Peer-Reviewed International Conference Papers with Proceedings*

Benjamin Girault, Shrikanth S. Narayanan, and Antonio Ortega. Towards a Definition of Local Stationarity for Graph Signals. In *2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2016

Benjamin Girault, Shrikanth S. Narayanan, Antonio Ortega, Paulo Gonçalves, and Eric Fleury. GraSP: A Matlab Toolbox for Graph Signal Processing. In *2016 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2016

Benjamin Girault, Paulo Gonçalves, Shrikanth S. Narayanan, and Antonio Ortega. Localization Bounds for the Graph Translation. In *2016 IEEE Global Conference on Signal and Information Processing*, Washington D.C., USA, Dec 2016

Benjamin Girault. Stationary Graph Signals using an Isometric Graph Translation. In *Signal Processing Conference (EUSIPCO), 2015 Proceedings of the 23rd European*. IEEE, 2015

Benjamin Girault, Paulo Gonçalves, Eric Fleury, and Arashpreet Singh Mor. Semi-Supervised Learning for Graph to Signal Mapping: a Graph Signal Wiener Filter Interpretation. In *Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing*, Florence, Italy, May 2014

Florian Schlachter, Christopher Schwarzer, Benjamin Girault, and Paul Levi. A Modular Software Framework for Heterogeneous Reconfigurable Robots. In Paul Levi, Oliver Zweigle, Kai Häußermann, and Bernd Eckstein, editors, *Autonomous Mobile Systems 2012*, Informatik aktuell, pages 193–201. Springer Berlin Heidelberg, 2012

### Peer-Reviewed National Conference Papers with Proceedings

Benjamin Girault, Paulo Gonçalves, and Éric Fleury. Signaux Stationnaires sur graphe : étude d'un cas réel. In *Proc. of GretsI 2015*, September 2015

Benjamin Girault, Éric Fleury, and Paulo Gonçalves. Traitement du Signal sur Graphe : Interprétation en termes de Filtre de l'Apprentissage Semi-Supervisé sur Graphe. In *Proceedings of AlgoTel 2014*, June 2014

Benjamin Girault, Paulo Gonçalves, and Éric Fleury. Graphe de contacts et ondelettes : étude d'une diffusion bactérienne. In *Proceedings of GretsI 2013*, September 2013

### Abstracts

Benjamin Girault, Eric Fleury, and Paulo Gonçalves. Function analysis through wavelets on dynamic contact graphs. In *ECCS Satellite Contagion workshop*, Barcelona, Spain, September 2013

### Book Chapters

Serge Kernbach, Benjamin Girault, and Olga Kernbach. On Self-Optimized Self-Assembling of Heterogeneous Multi-robot Organisms. In *Bio-Inspired Self-Organizing Robotic Systems*, pages 123–141. 2011

### Posters

Benjamin Girault, Paulo Gonçalves, Éric Fleury, and Arashpreet S. Mor. Semi-Supervised Learning for Graph to Signal Mapping: a Graph Signal Wiener Filter Interpretation, 2013. Poster presented at Réunion GDR ISIS, November 25, 2013

Benjamin Girault. Graphe de contacts et ondelettes, 2013. Poster presented at GDR ASR Rescom 2013, May 13–17, Île de Porquerolles, France

### Research Reports

Benjamin Girault, Paulo Gonçalves, and Eric Fleury. Translation and Stationarity for Graph Signals. Research Report RR-8719, École Normale Supérieure de Lyon ; Inria Rhône-Alpes, April 2015

### Other Publications

Serge Kernbach, Florian Schlachter, Raja Humza, Jens Liedke, Sergej Popesku, S. Russo, T. Ranzani, L. Manfredi, C. Stefanini, R. Matthias, Ch. Schwarzer, Benjamin Girault, P. Alschbach, Eugen Meister, and Oliver Scholz. Heterogeneity for Increasing Performance and Reliability of Self-Reconfigurable Multi-Robot Organisms. *CoRR*, abs/1109.2288, 2011

## Research Internships co-supervision

**Aymeric Fromherz** (supervisor: P. Gonçalves) – 2014 – Traitement du signal sur des graphes et détection de communautés (Graph signal processing and community detection)

**Arashpreet Singh Mor** (supervisor: P. Gonçalves) – 2013 – Graph to Signal Mapping: Study of a Duality Principle

## Research Projects

**MOSAR** – Study of contact data between people in the MOSAR (<http://www.mosar-sic.org>) dataset. Creation of a PostgreSQL database and cleaning up of raw data.

## Working Groups

**Stationarity on Graphs** – In collaboration with the signal processing team Sysiphe (ENS Lyon)

## Research Schools

**2014** – 9<sup>e</sup> école d'été de Peyresq en traitement du signal et des images : Traitement du signal et des images en grandes dimensions

**2013** – École d'été Rescom: Les réseaux centrés sur les contenus, Évolution ou révolution de l'Internet ?

**2010** – Winter School: Hot Topics in Distributed Computing

## Fields of Interest

**Research** Graph signal processing, Signal processing analysis, Graph analysis, Distributed computing, Graph theory, Network science, Big data, Clustering algorithms

**General** Programming, Free Softwares, Electronic, Mechanics, DIY, Guitar, Windsurfing, Hiking, Photography

## Miscellaneous

*Programming Skills:* C, C++, Matlab, Python, Java, Prolog, PostgreSQL, OCaml, HTML, PHP, JavaScript, Qt

*Languages:* French (mother tongue), English (fluent), German (basic understanding), Spanish (basic understanding)

## Research Internships

*Master Internship at IRISA (Rennes, France) with Anne-Marie Kermarrec (March-July 2012):* Clustering in an heterogeneous gossip protocol for news recommendation

*Internship at Universität Stuttgart (Germany) with Serge Kernbach (September 2010 - July 2011):* Towards Self-Assembling of Robotic Modules

*Internship at EPFL, Lausanne (Switzerland) with Rachid Guerraoui (March-July 2010):* Theoretical analysis of a gossip-based protocol, *What's Up*, a news broadcasting peer to peer system

*Internship at IRISA (Rennes, France) with Luc Bougé (May-July 2009):* A distributed random number generator based on BlobSeer and running on Grid5000

## Education

Master in Computer Science, MPRI, ENS Cachan, Cachan, FRANCE, September 2012.

**2011-2012** – 2nd year (Semester 1: 13.92 / Semester 2: 13.00 / Year: 13.46):

Software verification (Major) and Graph and Network Theory (Minor)

**2009-2010** – 1st year (Semester 1: 13.28 / Semester 2: 14.50 / Year: 13.89):

Bachelor in Computer Sciences, ENS Cachan, Cachan, FRANCE, 2009

**2008-2009** – 3rd year (Year: 13.93)

Classes Préparatoires aux Grandes Écoles, Lycée Chateaubriand, Rennes, FRANCE

**2007-2008** – MP\*:

15th at the ENS Cachan – Computer Sciences competitive exam, accepted at ENS Cachan

**2006-2007** – MP\*:

Accepted at Centrale Nantes

**2005-2006** – MPSI

## References

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