

Mounia Hamidouche

Post-doc at IMT-Atlantique

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Professional Activities

- Mar 2020- **Post-doctoral Researcher at IMT-Atlantique, Brest, France**
• **Topic:** Graph-based analysis of deep learning architectures
• **Supervisors:** Vincent Gripon, Lucas Drumetz and Bastien Padeloup
- 2017-May 2020 **Graduate Research Assistant at EURECOM, Sophia Antipolis, France**
• **Topic:** Spectral analysis of random geometric graphs and its applications
• **Track:** Probability theory, random graph and spectral graph theory
• **Supervisors:** Laura Cottatellucci and Konstantin Avrachenkov
- Oct-Jul 2019 **Visiting Scholar at University of Erlangen-Nuremberg, Erlangen, Germany**
• Spectral bounds of the normalized Laplacian of random geometric graphs
• Teaching assistant for a graduate course on machine learning
- Apr-Jun 2018 **Visiting Scholar at University of Erlangen-Nuremberg, Erlangen, Germany**
• Analysis of eigenvalues and spectral dimension of random geometric graphs
- Apr-Sep 2017 **Masters Internship at CentraleSupélec, Gif-sur-Yvette, France**
• Downlink performance of dense antenna deployment in 5G wireless networks
• **Supervisors:** Mérouane Debbah and Ejder Bastug
- 2015 **Internship at BNP-Paribas, Algiers, Algeria**
• Liquidity risk management and transformation

Education

- 2017-May 2020 **Ph.D in Communication Systems at EURECOM, Sophia Antipolis, France**
• **Topic:** Spectral analysis of random geometric graphs and its applications
- 2016 **MSc. in Applied Mathematics, Optimization, Paris-Saclay University, Palaiseau, France**
• **Coursework includes:** Stochastic processes, convex and non convex optimization, stochastic optimization, game theory, machine learning, operations research
- 2013-2015 **MSc. in Operations Research, University of Sciences and Technology Houari-Boumediene (USTHB), Algiers, Algeria**
- 2010-2013 **BSc. in Mathematics and Computer Science, Major: Operations Research, USTHB, Algiers, Algeria**

Teaching

- Mar-Jul 2020 **Teaching assistant, IMT-Atlantique**
• *Combinatorial optimization with applications to networked systems - graduate level*
- Oct-Jan 2019 **Teaching assistant, University of Erlangen-Nuremberg**
• *Machine learning for communications - graduate level*
- Linear Regression, logistic regression
- Feed-forward neural networks, convolutional neural networks

Technical Skills

- Programming** Python, Pytorch, Matlab, Cplex, Latex, Adobe Illustrator
- Languages** French, English, Arabic, German (beginner) and Amazigh (mother tongue)

Scholarships and Awards

- 2020 **Carnot Télécom and Société Numérique Fellowship, postdoctoral fellowship at IMT Atlantique in graph signal processing and deep learning**
- Oct-Dec 2018 **German Academic Exchange Service (DAAD) Fellowship, awarded a DAAD fellowship to visit Erlangen-Nuremberg university during my Ph.D**
- 2016 **Paris-Saclay Scholarship (IDEX Paris-Saclay), awarded the international Masters scholarship for academic excellence from Paris-Saclay University**
- 2015 **Honorary Degrees Distinction for University Curriculum, awarded by USTHB, Algeria**

Personal Interests

Reading, tennis, cycling, piano

Academic Services

Reviewer for:

- IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (IEEE PIMRC)
- IEEE International Workshop on Signal Processing Advances in Wireless Communications (IEEE SPAWC)
- IEEE Transactions on Wireless Communications (IEEE TWC)

Publications

- 1) K. Avrachenkov, L. Cottatellucci and **M. Hamidouche**^{*}, “Eigenvalues and Spectral Dimension of Random Geometric Graphs”, *8th International Conference on Complex Networks and their Applications*, Dec. 2019, Lisbon, Portugal.
- 2) **M. Hamidouche**, L. Cottatellucci and K. Avrachenkov, “On the Normalized Laplacian Spectra of Random Geometric Graphs”, *Journal of theoretical probability, second round review*, 2019.
- 3) **M. Hamidouche**, L. Cottatellucci and K. Avrachenkov, “Spectral Analysis of the Adjacency Matrix of Random Geometric Graphs.” *57th Annual Allerton Conference on Communication, Control, and Computing*, Sep. 2019, Illinois, USA.
- 4) **M. Hamidouche**, L. Cottatellucci and K. Avrachenkov, “Spectral Bounds of the Regularized Normalized Laplacian for Random Geometric Graphs”, *4th Graph Signal Processing Workshop*, Jun. 2019, Minneapolis, USA.
- 5) **M. Hamidouche**, E. Bastug, J. Park, L. Cottatellucci, and M. Debbah, “Downlink Performance of Dense Antenna Deployment: To Distribute or Doncentrate?” in *IEEE 28th Annual International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*, pp. 1-6, Oct. 2017, Montreal, Canada.

Preperit and Ongoing Work

- 1) **M. Hamidouche**, B. Pasdeloup, L. Drumetz and V. Gripon, “Few-shot Image Classification via Mean-shift and low-pass filter” To be submitted.
- 2) C. Lassance, M. Bontonou, **M. Hamidouche**, B. Pasdeloup, L. Drumetz, V. Gripon, A. Ortega “Graphs as Tools to Improve Deep Learning Methods”, *Book Chapter*, in *preparation*.
- 3) **M. Hamidouche**, L. Cottatellucci and K. Avrachenkov, “Spectral Analysis of Random Geometric Graph”, *To be submitted*.
- 4) **M. Hamidouche**, L. Cottatellucci and K. Avrachenkov “Clustering in Geometric Block Model”, in *preparation*.

^{*}The authors are listed in the alphabetical order