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 Pasdeloup

2017-Feb 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*
Apr-Jun 2018
- Spectral analysis of random geometric graphs
- Teaching assistant for a graduate course on machine learning

Apr-Sep 2017 **Masters Internship at CentraleSupelec,** *Gif-sur-Yvette, France*
- Downlink performance of dense antenna deployment in 5G wireless networks
- **Supervisors**: Mérouane Debbah and Ejder Bastug

Feb-Jun 2015 **Internship at BNP-Paribas,** *Algiers, Algeria*
- Liquidity risk management and transformation

Education

2017-Feb 2020 **Ph.D in Communication Systems,** *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 on 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 Graph 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", *Book Chapter*, *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