Lucas Nogueira Ribeiro

Curriculum Vitae
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Contact Information

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Education

Universidade Federal do Ceará, Fortaleza, Brazil

Ph.D., Teleinformatics Engineering — October 2019

M.Sc., Teleinformatics Engineering — February 2016

B.Sc., Teleinformatics Engineering — December 2014

Université Nice-Sophia Antipolis, Nice, France

M.Sc., Informatics — July 2014

Professional Experience

Communications Research Laboratory (CRL), Technische Universität Ilmenau – Ilmenau, Germany

Research fellow — November 2019 – present

Wireless Telecommunications Research Group (GTEL) – Fortaleza, Brazil

Ph.D. candidate — March 2016 – October 2019

Advised by prof. Dr. André de Almeida and prof. Dr. João César Mota

Array processing, tensor transceiver design, massive MIMO

Tendência Edutech – Fortaleza, Brazil

Data analysis consultant — December 2018

Development of dashboard in R (Shiny) to calculate the Brazilian National Education Plan (PNE) indicators from public microdata.

Christian Doppler Laboratory for Dependable Wireless Connectivity for the Society in Motion – Vienna, Austria

Visiting Researcher — 2017

MmWave massive MIMO transceiver design

I3S Laboratory – Sophia Antipolis, France

Research internship — March – July 2014

Tensor decompositions for atrial fibrillation analysis

Qualifications

Computer languages

Python, R, MATLAB, C++

Data analysis: Pandas, Tidyverse, SQL, Excel, Scrapy, Numpy, Scikit-learn

Toolchains

UNIX, Git, LaTeX, Markdown

Theoretical Skills

Mathematics – Linear and multilinear algebra, statistics, linear and non-linear optimization

Engineering – Digital signal processing, wireless communications systems, machine learning, web scraping

Languages

Portuguese: native speaker

English: full professional working proficiency

French: full professional working proficiency

German: basic communication skills

Teaching and Mentoring

Teacher Assistant

I have experience as a teacher assistant in the Telecommunications Engineering undergraduate course at Universidade Federal do Ceará, Fortaleza, in the following lectures:

- Digital signal processing (2018.1, 2019.1);
- Digital communications systems (2018.2).

Mentoring

Supervision of undergraduate students at Universidade Federal do Ceará within the scientific initiation program. The mentoring consisted of guiding the students through advanced signal processing topics, such as beamforming (Isac Lira, Clarissa Herculano in 2015) and multilinear algebra (Thiago Barbosa, 2018).

Presentations

Tutorials

I presented some tutorials at "Semana da Teleinformática" at Universidade Federal Ceará in 2015 and 2016:

- Introdução à esteganografia digital com Python;
- Python crash course.

Talks

I gave the following talks:

- Tensor processing applied to communications at the Encontro Anual do Iecom em Comunicações, Redes e Criptografia (ENCOM) in 2015;
- Transceiver design for large-scale systems at the TUM-UFC workshop in 2019.

Scholarships and Awards

CAPES Doctoral Scholarship — *2016 – 2019*

Erasmus Mundus SMART2 Scholarship — *2017*

CAPES Master Scholarship — *2015*

Universidade Federal do Ceará Academic Excellence Award — *2014*

BRAFITEC Scholarship — *2013 – 2014*

Scientific Initiation Scholarship Program (PIBIC/CNPq) *2010 – 2014*

Service

Peer Review

I have reviewed papers for the following journals

- IEEE Transactions on Audio, Speech, and Language Processing;
- IEEE Transactions on Vehicular Technology;
- IEEE Transactions on Communications;
- IEEE Transactions on Circuits and Systems II;
- IET Signal Processing;
- IET Microwaves, Antennas & Propagation;
- IET Communications;
- Circuits, Systems, and Signal Processing.

I have also served a paper reviewer for the 2019 International Workshop on Smart Antennas (WSA), the 2019 Brazilian Symposium on Telecommunications and Signal Processing (SBrT) and the IEEE GLOBECOM 2019.

Publications

My academic publications are listed on Google Scholar. Currently, I have a first-author h-index of 6.

Theses

- L. N. Ribeiro, "On supervised multilinear filtering: applications to system identification and antenna beamforming," 2016, Master's thesis. Advised by prof. A. L. F. de Almeida and prof. J. C. M. Mota;
- L. N. Ribeiro, "Tensor models applied to atrial fibrillation analysis," 2014, Master's thesis. Advised by prof. V. Zarzoso and prof. G. Favier;
- L. N. Ribeiro, "Separação cega de fontes: métodos e aplicações," 2014, Bachelor's thesis. Advised by prof. A. L. F. de Almeida and prof. J. C. M. Mota.

Papers

1. L. N. Ribeiro, S. Schwarz, A. L. F. de Almeida, "Double-sided massive MIMO transceivers for mmWave Communications," under review.
2. L. N. Ribeiro, A. L. F. de Almeida, J. C. M. Mota, "Separable linearly constrained minimum variance beamformers," Signal Processing, v. 158, pp. 15-25, 2019;
3. L. N. Ribeiro, A. L. F. de Almeida, J. A. Nossek, J. C. M. Mota, "Low-complexity separable beamformers for massive antenna array systems," IET Signal Processing, v. 13, pp. 434-442, 2019;
4. L. N. Ribeiro, S. Schwarz, M. Rupp, A. L. F. de Almeida, "Energy efficiency of mmWave massive MIMO precoding with low-resolution DACs," IEEE Journal of Selected Topics in Signal Processing, v. 12, pp. 298-312, 2018;
5. L. N. Ribeiro, J. C. M. Mota, A. L. F. de Almeida, "Processamento Tensorial de sinais aplicado às comunicações," Revista de Tecnologia da Informação e Comunicação, v. 5, pp. 14-18, 2015.

Conference Proceedings

1. L. N. Ribeiro, A. L. F. de Almeida, João C. M. Mota, "Low-rank tensor MMSE equalization," accepted at the 16th IEEE International Symposium on Wireless Communication Systems (ISWCS), 2019, Oulu, Finland;
2. L. N. Ribeiro, A. L. F. de Almeida, N. J. Myers, R. W. Heath Jr., "Tensor-based estimation of mmWave MIMO channels with carrier frequency offset," 41th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2019, Brighton, UK;
3. L. N. Ribeiro, B. Sokal, A. L. F. de Almeida, J. C. M. Mota, "Separable least mean squares beamforming," 36th Brazilian Symposium on Telecommunications (SBrT), 2018, Campina Grande, Brazil;
4. L. N. Ribeiro, S. Schwarz, M. Rupp, A. L. F. de Almeida, J. C. M. Mota, "A low-complexity equalizer for massive MIMO systems based on array separability," 25th European Signal Processing Conference (EUSIPCO), 2017, Kos, Greece;
5. L. N. Ribeiro, A. L. F. de Almeida, V. Zarzoso, "Enhanced block term decomposition for atrial activity extraction in atrial fibrillation ECG," 9th IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), 2016, Rio de Janeiro, Brazil;
6. L. N Ribeiro, A. L. F. de Almeida, J. M. M. Mota, "Tensor beamforming for multilinear translation invariant arrays," 41st International Conference on Acoustics, Speech, and Signal Processing, 2016 (ICASSP), Shanghai, China;
7. L. N. Ribeiro, A. R. Hidalgo-Muñoz, G. Favier, J. C. M. Mota, A. L. F. de Almeida, V. Zarzoso, "A tensor decomposition approach to noninvasive atrial activity extraction in atrial fibrillation ECG," 23rd European Signal Processing Conference (EUSIPCO), 2015, Nice, France;
8. L. N. Ribeiro, A. R. Hidalgo-Muñoz, V. Zarzoso, "Atrial signal extraction in atrial fibrillation electrocardiograms using a tensor decomposition approach," 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2015, Milan, Italy;
9. L. N Ribeiro, A. L. F. de Almeida, J. M. M. Mota, "Identification of separable systems using trilinear filtering," IEEE 6th International Workshop on Computational Advances in Multisensor Adaptive Processing (CAMSAP), 2015, Cancún, Mexico;
10. L. N Ribeiro, J. M. M. Mota, A. L. F. de Almeida, "Trilinear Wiener Filtering: application to equalization problems," 31st Brazilian Symposium on Telecommunications (SBrT), 2013, Fortaleza, Brazil.