Rubem Vasconcelos Pacelli

General information

Fortaleza, Ceará, Brazil
Universidade Federal de Ceará (UFC)
UFC-PPGETI-GPSI

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Career Summary

Skilled engineer with a multidisciplinary background in

- Machine learning, neural networks and pattern recognition.
- Statistical signal processing, system identification and uncertainty quantification.
- FPGA (Field Programmable Gate Array) and DSP (Digital Signal Processor).

Education

PhD in Teleinformatics Engineering — Jul 2021 – Present
Universidade Federal do Ceará (UFC) — *Fortaleza, Brazil*

MSc in Teleinformatics Engineering — Jan 2019 – Jun 2021
Universidade Federal do Ceará (UFC) — *Fortaleza, Brazil*

BSc in Electronics Engineering — Jan 2013 – Dec 2018
Universidade de Fortaleza (Unifor) — *Fortaleza, Brazil*

Experience

E.1 IRD–UFC research partnership — Jun 2019 – 2020
Universidade Federal do Ceará (UFC) — *Fortaleza, Brazil*

- Research on Machine Learning, Neural networks, and statistical signal processing.
- Developed a research project in collaboration with the IRD (*Research Institute Pour Le Développement*, France).

Research Funding and Projects

Pr1. Research and development of fully digital modems for satellite applications — Jun 2019 – Jun 2021
Master Scholarship from Coordination for the Improvement of Higher Education Personnel (CAPES)

- Fully digital modem for satellite application, aiming at its implementation in FPGA.
- Design of the logical scheme of the modulator and demodulator system.
- Development of synchronization modules for the symbol time offset and phase offset.

Pr2. Non-Coherent GMSK Demodulator for Cubesat Application — Feb 2017 – Jan 2018
Scientific Initiation Scholarship from National Council of Scientific and Technological Development (CNPq)

- Development of Non-Coherent GMSK Demodulator for Cubesat Application

Pr3. Synchronization in OFDM systems — Feb 2016 – Jan 2017
Scientific Initiation Scholarship from National Council of Scientific and Technological Development (CNPq)

- Research on synchronization techiniques applied to OFDM systems.

Pr4. Synchronization of signals with multicarrier — Feb 2015 – Jan 2016
Scientific Initiation Scholarship from National Council of Scientific and Technological Development (CNPq)

- Research on synchronization techiniques applied to multicarrier systems.

Skills

Technical

- Python and its data science ecosystem (Pandas, Numpy, Scikit-Learn, Scipy, ...).
- Julia, R, MATLAB/Simulink, C, C++, Java, Assembly and VHDL.
- GNU/Linux, Git, Makefile and UNIX Shell scripting.
- MicroSoft Office and LaTeX.

Languages

- English: Professional working proficiency (TOEFL IBT and Cambridge exams).
- Portuguese: Native speaker.
- French: Elementary knowledge.

Teaching and support

I have experience as an assistant teacher in Control Theory course at the Universidade de Fortaleza (UNIFOR), during my undergraduate course in Electronics Engineering.

I have experience as an assistant teacher in Digital Signal processing at the Federal University of Ceara, during my master's degree in Teleinformatics Engineering.

Academic Activity & membership

Associate Member

- Brazilian Telecommunications Society (SBrT)

Publications

My academic publications are also listed on Google scholar.

Theses

- Master's thesis (in Portuguese), "Modem AFSK coerente e completamente digital para módulo TT&C padrão CubeSat". Advised by prof. João Cesar Moura Mota and Antônio Macilio Pereira de Lucena.
- Bachelor's thesis (in Portuguese), "Projeto de um conversor para carregador portátil com interface USB tipo-C.". Advised by prof. Bruno Ricardo de Almeida. Universidade de Fortaleza (UNIFOR).

Journal Articles

J1. *Pacelli, R. V.*; *Lucena, A. M. P.* . OFDM system with frequency and phase estimators for carrier synchronization (in Portuguese). Revista Tecnologia, v. p. 40, 1-16, 2019.

J2. *Figueiredo, S. S.* ; *Lucena, A. M. P.* ; *Pacelli, R. V.* . Carrier selection technique for OFDM system in time-dispersive channels (in Portuguese). Brazilian Journal of Development, v. 6, p. 14318-14324, 2020.

J3. *Pacelli, R. V.*; *Lucena, A. M. P.* . Fully digital GMSK modem with non-coherent demodulation (in Portuguese). Brazilian Journal of Development, v. 6, p. 17988-17996, 2020.

J4. *Pacelli, R. V.*; *Lucena, A. M. P.* ; *Figueiredo, S. S.* . Carrier synchronization technique for OFDM communication systems (in Portuguese). Brazilian Journal of Development, v. 6, p. 14297-14305, 2020.

Conference Proceedings

C1. *Pacelli, R. V.* ; *Lucena, A. M. P.* ; *Mota J. C. M.*. All-digital AFSK modem with Viterbi detection for TT&C CubeSat transceiver. In: XXXVIII Simpósio Brasileiro de Telecomunicações e Processamento de Sinais - SBrT 2020, 2020.

C2. *Mourao, J. A.* ; *Lucena, A. M. P.* ; *Araujo, D. C.* ; *Pacelli, R. V.* . A technique for frequency synchronization in OFDM modulation (in Portuguese). In: Encontros Científicos 2016, Fortaleza. XXII - Encontro de iniciação à pesquisa, 2016. v. XXII.

Book Chapter

BC1. *Pacelli, R. V.* ; *Lucena, A. M. P.*. GMSK modem with non-coherent demodulation and all-digital implementation (in Portuguese), chapter in Catapan, E. A (Org). Os impactos de estudos voltados para as ciências exatas. Brazilian Journals Editora, 2020, v. 01, 1st ed, p. 21-30.

BC2. *Pacelli, R. V.*; *Lucena, A. M. P.* ; *Araujo, D. C.* ; *Mourao, J. A.*. Symbol time synchronization in OFDM systems (in Portuguese), chapter in Sales F. O. (Org). Ciências Exatas e da Terra: Exploração e Qualificação de Diferentes Tecnologias 4. Atena Editora, 2021, v. 4, p. 200-207.