Rubem Vasconcelos Pacelli

General information

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

Last update: October 18, 2023
Mobile (with WhatsApp) : +55 85 981824344
Other sources of contact/information:

Career Summary

Skilled Engineer with academic experience in Satellite Communications and multidisciplinary background in

- Deep Learning, Pattern Recognition, System Identification.
- Estimation, Detection and Optimization Theory, Adaptive Filtering.
- 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 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 a fully digital modem for satellite communications — Jun 2019 – Jun 2021
Master scholarship from Coordination for the Improvement of Higher Education Personnel (CAPES)

- Fully digital modem for satellite communications, targeting its implementation in FPGAs.
- Design of the logical architecture of the modulator and demodulator.
- Development of synchronization modules for the symbol timing delay and phase offset.

Pr2. Noncoherent GMSK demodulator for CubeSat systems — Feb 2017 – Jan 2018
Scientific initiation scholarship from National Council of Scientific and Technological Development (CNPq)

- Development of noncoherent GMSK demodulator for CubeSat systems.

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

- Scientific programming languages: Python, Julia, R, MATLAB/Simulink, Octave.
- Embedded systems programming languages: C, C++, MicroPython, and Assembly.
- Hardware Description Languages: VHDL.
- Electronic design automation (EDA): Altium, KiCad, LTspice, Multisim, Proteus Design Suite.
- GNU/Linux, Git, Makefile, LaTeX, and UNIX Shell scripting.

Languages

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

Teaching and support

I have experience as an assistant teacher in Digital Communications at the Federal University of Ceara during my Doctorate's degree in Teleinformatics Engineering at Universidade Federal fo Ceará (UFC).

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.

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

Academic Activity & membership

Associate Member

- Brazilian Telecommunications Society (SBrT)

Publications

My academic publications are also listed on Google scholar.

Theses

- Doctorate's thesis (in progress), "Detection, characterization, and forecasting of the equatorial ionospheric scintillation signal on GNSS receivers". Adivised by Prof. Dr. Felix Dieter Antreich and Prof. Dr. André Lima Ferrer de Almeida.
- Master's thesis, "Coherent and all-digital AFSK modem for TT&C module of CubeSat systems" (in Portuguese). Advised by Prof. Dr. João Cesar Moura Mota and Prof. Dr. Antônio Macilio Pereira de Lucena.
- Bachelor's thesis, "Design of a portable charger converter with USB Type-C interface." (in Portuguese). Advised by Prof. Dr. Bruno Ricardo de Almeida. Universidade de Fortaleza (UNIFOR).

Journal Articles

J1. *Pacelli, R. V.*; *Lucena, A. M. P.* . Fully digital GMSK modem with noncoherent demodulation (in Portuguese). Brazilian Journal of Development, v. 6, p. 17988-17996, 2020.

J2. *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.

J3. *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.

J4. *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.

Conference Proceedings

C1. *Moreira, N. A.* ; *Pacelli, R. V.* ; *Silva, Y. C. B.* ; *Maciel, T. F.* ;*Simoes, I.* ; *Mota, J. C. M.* ; *Hamida, C.* ; *Prado, R. Z.* ; *Caillault, E.* ; *Kacou, M.* ; *Gosset, M.*. Convolutional Long-Short-Term Memory Networks (ConvLSTM) for Weather Prediction using Radar and Satellite Images. In: XXIV Congresso Brasileiro De Automática - CBA 2022, 2022.

C2. *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.

C3. *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.* ; *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.

BC2. *Pacelli, R. V.* ; *Lucena, A. M. P.*. GMSK modem with noncoherent 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.

Patents

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- DIGITAL DEMODULATION ARCHITECTURE AND COHERENT DETECTION METHOD FOR AFSK SIGNALS (in Portuguese).
- Status: Filed.