

# Rubem Vasconcelos Pacelli

## GENERAL INFORMATION

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Fortaleza, Ceará, Brazil  
Universidade Federal de Ceará (UFC)  
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## CAREER SUMMARY

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

- Deep Learning, Uncertainty Quantification, System Identification.
- Estimation, Detection and Optimization Theory, Adaptive Filtering.
- FPGA (Field Programmable Gate Array) and DSP (Digital Signal Processor).

## EDUCATION

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<b>PhD</b> in Teleinformatics Engineering <i>Universidade Federal do Ceará (UFC)</i>	Jul 2021 – Present <i>Fortaleza, Brazil</i>
<b>MSc</b> in Teleinformatics Engineering <i>Universidade Federal do Ceará (UFC)</i>	Jan 2019 – Jun 2021 <i>Fortaleza, Brazil</i>
<b>BSc</b> in Electronics Engineering <i>Universidade de Fortaleza (Unifor)</i>	Jan 2013 – Dec 2018 <i>Fortaleza, Brazil</i>

## EXPERIENCE

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<b>E.1</b> IRD–UFC research partnership <i>Universidade Federal do Ceará (UFC)</i>	Jun 2019 – 2020 <i>Fortaleza, Brazil</i>
<ul style="list-style-type: none"><li>• Research on Machine Learning and Statistical Signal Processing.</li><li>• Developed a research project in collaboration with the IRD (<i>Research Institute Pour Le Développement</i>, France).</li></ul>	

## RESEARCH FUNDING AND PROJECTS

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<b>Pr1.</b> Research and development of a fully digital modem for satellite communications Master scholarship from Coordination for the Improvement of Higher Education Personnel (CAPES)	Jun 2019 – Jun 2021
<ul style="list-style-type: none"><li>• Fully digital modem for satellite communications, targeting its implementation in FPGAs.</li><li>• Design of the logical architecture of the modulator and demodulator.</li><li>• Development of synchronization modules for the symbol timing delay and phase offset.</li></ul>	
<b>Pr2.</b> Noncoherent GMSK demodulator for CubeSat systems Scientific initiation scholarship from National Council of Scientific and Technological Development (CNPq)	Feb 2017 – Jan 2018
<ul style="list-style-type: none"><li>• Development of noncoherent GMSK demodulator for CubeSat systems.</li></ul>	
<b>Pr3.</b> Synchronization in OFDM systems Scientific initiation scholarship from National Council of Scientific and Technological Development (CNPq)	Feb 2016 – Jan 2017
<ul style="list-style-type: none"><li>• Research on synchronization techniques applied to OFDM systems.</li></ul>	
<b>Pr4.</b> Synchronization of signals with multicarrier Scientific initiation scholarship from National Council of Scientific and Technological Development (CNPq)	Feb 2015 – Jan 2016
<ul style="list-style-type: none"><li>• Research on synchronization techniques applied to multicarrier systems.</li></ul>	

## SKILLS

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### Technical

- Scientific programming languages: Python, Julia, R, MATLAB/Simulink, Octave
- Programming (or hardware description) languages for embedded systems: C, C++, Python, MicroPython, Assembly and VHDL.
- GNU/Linux, Git, Makefile, L<sup>A</sup>T<sub>E</sub>X, and UNIX Shell scripting.

### Languages

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

## TEACHING AND SUPPORT

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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 do 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

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### Associate Member

- Brazilian Telecommunications Society (SBrT)

## PUBLICATIONS

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My academic publications are also listed on [Google scholar](#).

### Theses

- Doctorate's thesis (in progress), "Modeling, detection and characterization of the equatorial ionospheric scintillation signal on GNSS receivers". Advised 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. ; Caillaud, 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.