

# Rubem Vasconcelos Pacelli

## GENERAL INFORMATION

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

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## CAREER SUMMARY

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Skilled engineer with a multidisciplinary background in

- Statistical signal processing and non-linear system identification.
- Machine learning, neural networks and pattern recognition.
- 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 Electronic 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 – present <i>Fortaleza, Brazil</i>
<ul style="list-style-type: none"><li>• Research on Machine Learning, Neural networks, 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 fully digital modems for satellite applications 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 application, aiming at its implementation in FPGA.</li><li>• Design of the logical scheme of the modulator and demodulator system.</li><li>• Development of synchronization modules for the symbol time offset and phase offset.</li></ul>	
<b>Pr2.</b> Non-Coherent GMSK Demodulator for Cubesat Application 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 Non-Coherent GMSK Demodulator for Cubesat Application</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

- Python and its data science ecosystem (Pandas, Numpy, Scikit-Learn, Scipy, ...), MATLAB/Simulink, C, C++, Java, Assembly and VHDL.
- GNU/Linux, Makefile and UNIX Shell scripting.
- Git, MicroSoft Office, and L<sup>A</sup>T<sub>E</sub>X.
- Web scraping, Regex, and RPA (Robotic Process Automation).
- Mathematical animations engine for teaching/presentation purpose: [Manim](#).

### Languages

- English: Professional working proficiency ([Level B2 on TOEFL IBT](#). Total score: 74 out of 120).
- Portuguese: Native speaker.

## TEACHING AND SUPPORT

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

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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

- 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.