Tiago Vilela Lima Amorim

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Objective

Electrical Engineering PhD with expertise in numerical analysis and scientific computing, focused on developing computational methods for solving complex engineering problems. Seeking to contribute advanced modeling and simulation skills in research or industry environments.

Education

Federal University of Minas Gerais — Belo Horizonte, Brazil
Bachelor of Electrical Engineering (Power Electronics and Power Systems) — 2011 – 2016
– *Undergraduate Thesis: Frequency Response Modeling of Electric Circuits Using Digital Systems*

University of Illinois at Urbana-Champaign — Urbana-Champaign, USA
Bachelor of Electrical Engineering (Science without Borders, CAPES Scholarship) — 2014 – 2014

Federal University of Minas Gerais — Belo Horizonte, Brazil
Master of Electrical Engineering (CAPES Scholarship) — 2018 – 2020
– *Dissertation: MLPG-MoM Hybrid Numerical Technique Applied to Electromagnetic Scattering*

Federal University of Minas Gerais — Belo Horizonte, Brazil
PhD Program in Electrical Engineering (CAPES Scholarship) — Dec. 2020 – Jun. 2025
– *Thesis: Discontinuous Galerkin Method Applied to Electromagnetic Problems*

The Ohio State University — Columbus, USA
Sandwich PhD Program (PDSE, CAPES Scholarship) — Sept. 2023 – May. 2024

Experience

Scientific Research Intern — Wireless Ad Hoc Networks — 2012
Federal University of Minas Gerais — Belo Horizonte, Brazil

- Investigated routing protocols and network topology strategies for decentralized wireless communication.

Teaching Assistant — Electric Circuits — 2013
Federal University of Minas Gerais — Belo Horizonte, Brazil

- Assisted in teaching undergraduate electric circuit theory, including DC and AC analysis.
- Helped students with problem-solving during lab sessions and provided support with course material.

Visiting Scholar — Computational Electromagnetics — Sept. 2023 – May 2024
The Ohio State University, ElectroScience Laboratory — Columbus, OH, USA

- Developed high-performance time-domain solvers for electromagnetic wave propagation.
- Integrated numerical models for dispersive media into an in-house simulation framework.

Skills

Technical Proficiency

- **Proficient:** Python, C, C++, Lua, CMake, Git, LaTeX, Linux, Matlab, Docker, CI/CD.
- **Familiar:** Shell scripting, Ansible, Assembly, Reverse engineering, SQL, NoSQL, Rust, Go, JavaScript, TypeScript, Astro, React, Android development, Cloud computing, Cloud infrastructure.

Electrical Engineering Software

- PSpice, Multisim, Cadence OrCAD, COMSOL Multiphysics, AutoCAD, Inkscape

Linguistic Proficiency

- Portuguese (Native), English (C1, TOEFL ITP: 602), French (A2), Spanish (A1).

Projects

GitHub

– Plane Wave Expansion Framework for Photonic Crystal Analysis | *GitHub*

– FDTD Framework for Electromagnetic Simulations | *GitHub*

– Analytical Solutions for Electromagnetic Scattering | *GitHub*

– DGTD Framework for Electromagnetic Simulations | *GitHub*

– LaTeX Package for Generating Professional Curricula Vitae | *GitHub*

– Contributions to FEniCSx (Open-source PDE solving platform) | *GitHub*

Publications

– **AMORIM, T. V. L.**; MOREIRA, F. J. S.; RESENDE, U. C.. Aplicação de Técnica Sem-Malha Híbrida na Solução de Espalhamento Eletromagnético. *In: XXXVII Brazilian Symposium on Telecommunications and Signal Processing (SBRT), 2019, Petrópolis.*

– **AMORIM, T. V. L.**; SILVA, E. J.; MOREIRA, F. J. S.. Discontinuous Galerkin Time-Domain Method in Computational Electrodynamic Scattering Problems. *In: XX Brazilian Symposium on Microwave and Optoelectronics (SBMO), 2022, Natal.*

– **AMORIM, T. V. L.**; SILVA, E. J.; MOREIRA, F. J. S.; TEIXEIRA, F. L.. A Plug-and-Play DGTD Implementation for General Dispersive Media. *2024 IEEE AP-S International Symposium on Antennas and Propagation, Firenze, Italy, July 2024.*

– **AMORIM, T. V. L.**; SILVA, E. J.; MOREIRA, F. J. S.; TEIXEIRA, F. L.. Modular Discontinuous Galerkin Time-Domain for General Dispersive Media with Vector Fitting. *IEEE Journal on Multiscale and Multiphysics Computational Techniques, vol. 10, pp. 179–186, Feb. 2025.*