

André Carvalho Silva

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SUMMARY

PhD in Computer Science with over 4 years of industry experience specializing in AI-powered AppSec, automated code refactoring (codemods), and machine learning. Proven track record of bridging advanced academic research with practical, scalable SaaS production software. Expert in Python, Java, and AST manipulation frameworks.

EXPERIENCE

- **Pixee** USA (Remote Work)
Contractor - Software Engineer *Sept. 2022 – June 2026*
 - **AI-powered Appsec:** Co-architected and maintained an AI-powered AppSec SaaS, improving vulnerability detection rates and reducing false positives by utilizing LLMs and AST analysis.
 - **Codemodder:** Maintainer of 'Codemodder', an open-source, pluggable framework using AST manipulation libraries to automate security fixes across thousands of repositories.
- **University of Waterloo** Waterloo, ON - Canada
Visiting Graduate Student *Jul. 2015 – Jul. 2016*
 - **Graphs with at most one crossing:** Research on 2-crossing-critical graphs in collaboration with Prof. R. Bruce Richter.
- **Fundação de Apoio à Pesquisa e Extensão de Sergipe** Aracaju, SE - Brazil
Data Scientist/Software Developer *Apr. 2010 – Dec. 2010*
 - **Home Automation System:** Engineered a voice-activated home automation system for the portuguese language using ML and semantic ontologies, achieving an very-high accuracy rate in command validation and co-authoring a peer-reviewed paper on the results.

PROGRAMMING SKILLS

- **Languages:** Python, Java, C++, C#, JavaScript/TypeScript
- **AI & Data Science:** MLflow, pydantic-ai, scikit-learn, NumPy, Pandas
- **Program Analysis & Compilers:** libcst, tree-sitter, JavaParser, jscodeshift, Roslyn, AST Manipulation, Codemod Frameworks
- **Backend & Frameworks:** FastAPI, Django, Pydantic, Gunicorn, asyncio, BOOST/C++, OGDF
- **Tools & DevOps:** Git/GitHub, Docker, GNU/Linux, Claude Code, Maven, Gradle, LaTeX

EDUCATION

- **University of Campinas** Campinas, SP - Brazil
Phd. in Computer Science *Mar. 2013 – Jul 2018*
- **University of Campinas** Campinas, SP - Brazil
Msc. in Computer Science *Mar. 2011 – Jul 2013*
- **Federal University of Sergipe** São Cristovão, SE - Brazil
Bsc. in Computer Science *2005 – 2009*

PROJECTS

- **Codemodder:** A pluggable framework for building expressive codemods built using Python/Java and AST manipulation libraries.
- **GDraw:** A collection of tiny libraries and scripts (C++, Python) to draw crossing-optimal and planar graphs.

SELECTED PUBLICATIONS

A. C. Silva, A. Arroyo, R. B. Richter, and O. Lee. “Graphs with at most one crossing”. In: *Disc. Math.* 342.11 (2019), pp. 3201–3207

R. B. Richter, A. C. Silva, and O. Lee. “Bounding the Number of Non-duplicates of the q-side in Simple Drawings of $K_{p,q}$ ”. In: *Graphs and Combinatorics* (2021)

G. Ferreira, H. Macedo, L. Matos, A. Leandro, E. Seabra, W. Sampaio, A. Silva, T. Mendonça, and M. Soto. “Semantic Validation of Uttered Commands in Voice-activated Home Automation”. In: *Proceedings of the 14th International Conference on Artificial Intelligence ICAI*. vol. 12. 2012