

Pedro Ferrazoli Ciambra

Computer Engineer

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ACADEMIA

Advisor: Prof. Hervé Yviquel 2022
Co-optimizing Dataflow Graphs and Actors with MLIR

Objective: Use graph and implementation data together when optimizing dataflow

Challenge: Current solutions are difficult to integrate with modern IR tools

Solution: New compiler that uses MLIR to facilitate integration with current projects.

Submitted to SiPS22 (review pending)

Advisor: Prof. Fábio Luiz Usberti 2018
Graduation Thesis

Objective: An implementation of the Greedy Heuristic algorithms for the Maximal Blood Collection Problem

Challenge: Bad performance of existing solution

Solution: Pure C++ implementation, orders of magnitude of improvement in performance

Advisor: Prof. Diego Aranha 2015-2016
Cryptography for IoT

Objective: Implementation of state-of-the-art cryptographic algorithms for ARM

Challenge: Existing implementations' poor performance and vulnerability to side-channel attacks

Solution: Development techniques for robust and optimized C code

Advisor: Prof. Vlado Kesselj 2015
Research Assistant

Objective: A web-based calendar application

Challenge: Flexible input recognition

Solution: Parsing and processing of english text and rendering of complex tables with Perl

Advisor: Prof. André Santanchè 2013-2014
Cellular Automata applied to Education

Objective: Web-based graphical simulation

Challenge: Lack of formal Cellular Automata rule description language

Solution: Creation of model and use of JS + HTML5 for custom UI and simulation runtime

EDUCATION

MSc in Computer Science 2020-2022
University of Campinas (UNICAMP)

Specializing in Compilers, LLVM/MLIR, Dataflow

BSc in Computer Engineering 2012-2018
University of Campinas (UNICAMP)

Attended Game Jams: GGJ (every year), Meeting Jam (local, was part of the staff), LibreJam

Game development student club

Competitive programming classes and tournaments

International Exchange 2014-2015
Dalhousie University

Science Without Borders scholarship program

Atlantic ACM programming contest

NorthSec 2015 (cybersecurity CTF competition)

WORK EXPERIENCE

Javary Co. 2018-2019
Software Developer

Mobile games startup

Focus on the Godot Game Engine

GDScript, C++, Java, Objective-C++

Team leadership and organization

Responsible for UX/UI and tools development

Kryptus Cybersecurity 2017
Software Development Intern

Cybersecurity and crypto firm

Full stack (up to UEFI extension code)

Emphasis in C and x86 assembly

Reverse engineered legacy hardware

Documented findings

Refitted legacy code

Product was put back on sale

LANGUAGES & SKILLS

English: Fluent (1 year residence, TOEFL, Cambridge FCE)

French (intermediate)

Design: diagramming freelance jobs. Experience with Adobe suite, AutoCAD, Blender, Inkscape, Krita

Programming: Unix/Bash (6 years), C/C++ (5 years), Python (4 years), JavaScript (1 year), ML Toolkits (TensorFlow, PyTorch) (6 months), Java, C# (2 years), Django (6 months), Objective-C (6 months), Rust (1 year), LLVM/MLIR (1 year)