Rafael Campos Nunes

Computer Scientist

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Education

1. University of Brasilia, BSc. Computer Science. 2019–2022
2. Technological Federal University of Paraná, BSc. Computer Science. 2016–2019
3. Federal Institute of Technology, Informatics. 2012–2015

Experience

SICOOB Pagamentos (2023–Present)
I'm working on adapting/writing software in the Payment Industry and constantly improving the performance of existing software achieving real-time payment transaction processing times of under 70ms on a volume of 4M daily processed transactions. I work primarily with distributed systems, designing and developing toward requested features and products.
[go, java, oracle, kafka, internal cloud solution, linux, kibana, docker]

Siden (2022–2023)
I worked on a wide spectrum of technologies to develop a new generation of CDNs for streaming services. I used Go extensively with non-relational databases (MongoDB) and all sorts of messaging systems such as Kafka and NATS to develop highly reliable distributed systems. We have a micro-service oriented architecture using AWS, and I also developed some embedded software for the ARM platform that would run part of our services. I successfully implemented a distributed system for device authentication with multiple third-party actors and a system for certificate issuing with our PKI and helped to maintain other services that made part of our cloud infrastructure. Also, I developed a dynamic debug service that would trigger a debug session across every service we had if requested so.
[go, nats, kafka, aws, helm, terraform, linux, arm, pki, datadog, grafana, postgres, mongodb redis, docker, kubernetes]

SICOOB Pagamentos (2020–2022)
I've worked on the development and maintenance of micro-services and monoliths that were responsible for a large part of the payment transaction processing in Brazil. I used Java (jPOS), Spring Boot and Go with relational databases.
[go, java, oracle, kafka, internal cloud solution, linux, kibana, docker]

Mauro Silva Lawyers and Associates (2019–2020)
I worked developing tools that automated juridic tasks of a law firm. I implemented a knowledge storage that would ease the work of lawyers when trying to find specific federal regulations. Scrapers, relational databases and NLP (Natural Language Processing) models were the fundamental technologies I had to use. The knowledge storage was developed and briefly used, along with some automation programs that made the life of the office easier by, for instance, providing document generation based on templates that would generate thousands of documents on a millisecond scale.
[go, python, html, css, js, postgres, docker, linux]

Technological University of Paraná (2018–2018)
Developed a platform designed to facilitate data submission by the general public, which was then reviewed by professors and companies interested in implementing or funding the ideas. The primary goal was to connect companies, the public, and the university.
[go, html, css, js, postgres, linux]

Supermercados do Norte do Brasil Ltda. (2014–2016)
I developed automation tools for POS (Point of Sale) systems, employee workstations, and handheld devices used to count, register, and issue receipts for received goods, as well as to manage inventory control. I successfully delivered applications that

significantly reduced the number of hours required for employees to input thousands of items into the system.
[erlang, java, oracle, soap, linux, windows, windows ce]

Projects

- **u-root (github.com/u-root/u-root)**
  A userland written in Go that can create a file system on root mode (initramfs) containing a set of tools busybox alike

- **kokiri (github.com/newaypix/kokiri)**
  Graphics library to create games using C++ and SDL2.

- **brain (github.com/brain-labs/brain)**
  Esoteric programming language (brainfuck dialect) written in C++ that compiles binaries using our LLVM backend.

- **zrm (github.com/rafaelcn/zrm)**
  A secure deletion tool, or is it a writing removal tool (?). Written in Go to be quite similar to the shred command but simpler.

- **zepto (github.com/rafaelcn/zepto)**
  A complete processor of 16 bits, implemented in Deeds with a Python assembler.

- **auto-move (github.com/rafaelcn/auto-move)**
  A file watcher tool to move files based on a set of rules (defined by you). Very neat for organizing your download folder files or folders shared on the network.

Research

- Construction of an autonomous robot for detection of structural failures, 2017.
  [c, circuit design, arduino]

- Study and development of a multi-platform graphical framework with SDL2 and OpenGL, 2017.
  http://sh.utfpr.edu.br/setac/anais2017.pdf
  [OpenGL, SDL2, c++]

- An alternative to imperative programming: OCaml, 2018.
  http://sh.utfpr.edu.br/setac/anais2018.pdf
  [ocaml, c++]

- Mathematical Model for the Ebola Outbreak in Guinea, 2019.
  https://proceedings.sbmac.org.br/sbmac/article/view/2973
  [ode, pde, numeric solutions]

- Embracing modern C++ features: An empirical Assessment on the KDE community, 2023
  https://doi.org/10.1002/smr.2605
  [c++]