

Skills

- **Programming:** Python, SQL, Excel, LaTeX, RegEx, Ruby, Julia, Assembly, SML, Racket, UML, Java.
- **Technologies:** NumPy, Pandas, TensorFlow, Docker, Pytest, GitHub.
- **Web Development:** Plotly Dash, HTML, CSS, GitHub Actions, Javascript.

Projects

Productivity autotracker, [Project Code](#).

- Implemented activity tracking logic and event categorization in Python to determine user productivity.
- Used SQL databases to keep track of user data, trends, settings and milestones.
- Made the interface and configuration using Plotly Dash, with easily configurable user settings.

Hack computer design and game implementation, [Project Code](#).

- From a NAND gate abstraction and some emulation tools, I implemented the Hack computer software.
- Implemented the theoretical hardware architecture using HDL.
- Implemented an assembler, to transform assembly files into Hack files (binary code for the Hack platform).
- Implemented a translator, translates VM code (stack based operations) into assembly.
- Implemented a compiler, to compile Jack files into VM code.
- Finally, I implemented a Jack OS and a Jack game.

Event scheduler, [Project Code](#).

- Implements an event scheduler using a recursive backtracking algorithm within a Dash web-based application.
- GUI was implemented using CSS and the Dash framework in the Julia language.
- Unit testing was done on all functionalities and special functions.

DNA sequence analysis using alignment and scoring matrices, [Project Code](#).

- Implemented functions to create alignment and scoring matrices for quantifying similarity in 2 DNA sequences.
- Did statistical hypothesis testing with Z-scores of multiple local alignments with one random sequence.
- Implemented functions to quantify dissimilarity between 2 strings for spelling check using edit distances.

Computer network resilience analysis, [Project Code](#).

- Analyzed the connectivity of a computer network by randomly disabling computers on the network.
- Compared the resilience of a provided graph and randomly generated ER and UPA graphs (DPA graph variety).
- Implemented and compared (time complexity) 3 algorithms for removing computers from the network.
- Analyzed how the largest connected component changed depending on the graph creation algorithm.

Machine learning specialization, [Project Code](#).

- Created neural networks for image classification, collaborative filtering for movie recommendation.
- Created anomaly detection for server operations, reinforcement learning for lunar lander.
- Created clustering for image compression, decision trees for mushroom recognition.
- Performed model analysis, data engineering and data visualization to various real-world ML problems.
- Used technologies: NumPy, TensorFlow, Keras, Scikit-Learn, Matplotlib, Pandas, OpenAI gym.

Education

- Currently studying by the [Open Source Society University \(OSSU\)](#) computer science path. See earned certifications on my portfolio. The OSSU curriculum is a complete education in computer science using online materials. It is designed according to the curriculum guidelines for undergraduate degree programs in computer science, by IEEE.
- Native portuguese, fluent english: Cambridge Advanced English Level 2 Certificate in ESOL International.