Francisco Cunha

Delft, Netherlands hello@franciscunha.com francunha franciscunha

Education

BSc ***Computer Science and Engineering*, Delft University of Technology** — Delft, Netherlands
Distinctions: *cum laude*. GPA: 3.95/4.0 — Sep 2022 – Jun 2025

Minor ***Game Studies*, Leiden University** — Leiden, Netherlands

Experience

Delft University of Technology, Teaching Assistant — Delft, Netherlands
Sep 2023 – Jun 2025

Taught course contents in one-on-one and small group sessions, and graded coursework and exams. For the courses: Reasoning and Logic, Introduction to Programming, Computer Organization, Game Development Project, Computer Networks, Probability Theory and Statistics, Software Engineering Methods, and Collaborative Software Engineering Project.

Delft University of Technology, Head Teaching Assistant - Computer Organization — Delft, Netherlands
Sep 2024 – Feb 2025

- Mediated communication between lecturers and the course's 35 TAs.
- Wrote exam questions, worked on improvements to course material and helped organize course activities.

DHAUZ, Data Science Intern — Brazil (Remote)
Apr 2022 – Jul 2022

Used Python and Excel to develop optimization algorithms and perform data analysis, in order to build a system to guide supply chain decisions for an international agricultural company.

Logistics and Optimization Group UFPB, Undergraduate Researcher — João Pessoa, Brazil
Apr 2020 – Jul 2022

- Co-authored a paper on a real life application of decision-making algorithms published in Springer's OR Spectrum.
- Built SACI *(en: Informatics centre's decision-making system)*, a website that uses optimization algorithms to aid in academic decision-making.

Projects

Visit my portfolio at franciscunha.com/portfolio to read through all my projects.

Personal website — Jan 2025
Built a portfolio website using the Svelte framework, which programatically creates project pages based on a collection of markdown files.

Alexandria — Apr 2024 – Jun 2024
Using React and NextJS, developed the front-end for a collaborative platform dedicated to scientific research, with built-in discussion and peer review systems. Led a 5 person team, coordinating client and team meetings, and managing the development process through Scrum.

Parallellines — Dec 2024
Using CUDA and C++, implemented a GPU software rasterizer from scratch to replicate OpenGL's basic functionality. It can render a 3D model with a diffuse and specular texture and a normal map, through user-defined vertex and fragment shaders.

Cloud Hopper — Oct 2024
Solo developed a 3D platformer using the Godot engine. Implemented two level building blocks that introduce unique gameplay mechanics, a 3D character controller, procedural level decorations, and an assortment of other gameplay features.

Sortify — Aug 2024
Using Rust to interface with the Spotify API, built a command line application to organize playlists.

Raytracer features Oct 2023

Added a bounding volume hierarchy to a basic raytracer, using a surface area heuristic with binning as the splitting criterion; Implemented a bloom post-processing effect with a 2D gaussian filter; Added support for contributions of glossy reflective rays.

Ghost Swap Jul 2023

In a two-person team, developed a 2D twin-stick shooter in under 48 hours for the GMTK Game Jam 2023, in which it ranked 250 out of 6771 games.

Papercut Apr 2023

In a two-person team, developed a 2D stealth platformer in under 48 hours for Ludum Dare 53.

Mask detection Dec 2021

In a 5 person team, implemented an application which uses YOLOv5 to detect face masks in a video feed and notifies lack of usage via a Telegram bot.

Evaluator assignment and scheduling problem Jul 2021 – Nov 2021

Formulated and implemented an integer programming model to assign evaluators to grant proposals while simultaneously scheduling meetings amongst evaluators of the same proposal.

Meta-heuristic for the minimum latency problem Apr 2020

Using C++, implemented the GILS-RVND meta-heuristic for the minimum latency optimization problem. Learned how to implement algorithms from scientific papers.

Skills

Programming languages: Proficient with C++, Java, C#, Python and JavaScript

Game engines: Experience building games with Unity (published projects) and Godot (published projects)

Web development: Experience building websites with several JavaScript (meta)frameworks, including React, NextJS and Svelte

Development tooling: Extensive Git experience; experience with CI/CD through GitLab pipelines and GitHub Actions; experience using and defining Docker containers

Languages: English (fluent), Portuguese (native), German (intermediate)

Soft Skills

Leadership and teamwork: Led teams in projects such as Alexandria and as Head Teaching Assistant; worked in teams for several projects in an academic setting, often receiving positive feedback

Technical communication: Experience as Teaching Assistant required close communication with students, full understanding of their issues, and well-formulated explanations to resolve them

Project management and organization: Collaborated on game jams, working efficiently under tight deadlines; balanced multiple projects and roles simultaneously, demonstrating time management and adaptability

Publications

Minimizing energy consumption in a real-life classroom assignment problem Apr 2022

Raphael Medeiros Alves, ***Francisco Cunha***, Anand Subramanian, Alisson V. Brito

10.1007/s00291-022-00674-z (OR Spectrum)

SACI – SISTEMA DE Apoio à decisão DO CENTRO DE INFORMÁTICA: O CASO DA UFPB. *(en: Informatics centre's decision-making system: Case study at UFPB)* Nov 2022

Lucas Guedes, ***Francisco Cunha***, André Iarley, Bruno Bruck, Luciano Costa, Anand Subramanian

Anais do Simpósio Brasileiro de Pesquisa Operacional

Extracurricular Activities

Student mentor at TU Delft: Developed communication and leadership skills by guiding and advising a group of 25 freshmen in weekly meetings during their first semester of university