RAREȘ NANDRA

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🌐 LANGUAGES

Romanian   English

📖 PROFILE

For 7+ years, I've combined curiosity with execution, consistently turning ideas into working projects. My journey includes working as a freelancer in my hometown, being a member in a multi-award-winning robotics team, winning two hackathons, completing an internship, working among researchers at the "Institut de Physique Biologique", being a collaborator for a startup, leading a team of volunteer programmers to build a news platform for an NGO and developing numerous personal projects in my spare time. What ties all of these experiences together is a constant drive to learn, build, and deliver and I look forward to what my blend of enthusiasm, knowledge, and passion could bring to this role as the next chapter of my programming journey.

🎓 EDUCATION

Bábes Bolyai, *Databases*

10/2025 – Present
Master's degree

Bábes Bolyai, *Mathematics and Computer Science*

10/2022 – 07/2025
Bachelor's degree

My bachelor's thesis: *"Unifying the Workflow for MRI Image Analysis and Visualization through an Extensible Web Platform"* was **graded 10/10** and was **awarded by Siemens** at an event organized by the university for top theses.

💼 PROFESSIONAL EXPERIENCE

Sothapia, *Collaborator*

04/2024 – 08/2025
Cluj-Napoca, Romania

As a collaborator at Sothapia, a startup focused on developing **modular IoT solutions for industrial and commercial monitoring**, I lead the technical efforts that allow clients to **remotely monitor sensor data, generate compliance reports, and configure alarms via a mobile app**, while ensuring reliability, security, and scalability.

- Built **ESP32-based sensors** featuring encrypted storage, offline and online operation, and automated firmware updates.
- Developed the **end-to-end software stack**, including MQTT communication, backend servers, and a **React Native app** for live data, historical trends, and automated reporting.
- Engineered **robust, secure, and modular systems**, allowing rapid adaptation to new sensor types and data modalities.
- Implemented **scalable infrastructure**, separating sensor communication and API (mobile app) servers, with support for **canary builds** and seamless updates.

The platform is currently used by clients in refrigeration, transport, and industrial monitoring. Its **modular design allows quick extension to new sensors and applications**, positioning the startup for further growth into additional monitoring solutions.

What I learnt: Developed a reliable and secure end-to-end product, estimated project timelines, provided client support, and tailored solutions to user needs.
Technologies: C++ (ESP32), Python, Flask, React Native (Expo), TypeScript, React, Vite, MongoDB, Redis, Nginx, Ansible, Docker, CI/CD, Git, Gunicorn, fail2ban.

Institut de Physique Biologique, *Internship*

07/2024 – 10/2024
Strasbourg, France

Developed **IPB-viewer**, a unified web platform for MRI image analysis that consolidates multiple desktop viewers into a single, intuitive, and modern web interface.

- Packaged all existing view types into a **tab-based interface**, making navigation between anatomical, functional, connectome, and comparison views seamless.
- Ported the **full feature set of desktop viewers to the web**, including configurations for intensities and orientations, colormaps, overlay management, and other advanced options.
- Introduced **unique capabilities** not found in other MRI viewers, such as **collaborative sessions** with real-time synchronization and a custom viewer for patient metadata.
- **Forked and extended the Niivue WebGL library.**
- Built a **modular and extensible architecture**, allowing new view types and configurations to be added easily. The app manages state, files, and tabs independently of specific view implementations.

The platform has received **positive feedback** from the lab, is currently in **active use**, and there are plans to present it to other laboratories to **standardize MRI workflow across research teams.**

What I learnt: Insight into the academic research environment, How to contribute to a complex open-source library.
Technologies: TypeScript, React, WebGL, Redis, Python, Flask, Docker, Git

fme Romania, *Internship*

07/2023 – 10/2023
Cluj-Napoca, Romania

Developed a **Microsoft Teams extension** to display dynamically generated reports based on YAML-defined SQL queries. The backend periodically executed the queries, formatted the results, and provided data for the extension to render as **charts, tables, or text** according to the YAML report definitions.

What I learnt: Agile/Scrum methodologies, To quickly adapt to unfamiliar tech stacks.
Technologies: TypeScript, React, FluentUI, SwaggerUI, PostgreSQL, pgAdmin, Prisma, NestJS, Firestore, Azure Active Directory, JWT, AuthGuard, Docker, Git, Jest, GitLab CI/CD, A.W.S

🏅 AWARDS

1st Place, *iTec Hackaton, Timișoara*

05/2021

Despite beeing the **only highschool students** out of 35 teams of university students me and my partner managed to stand out and win the first place. We even **received an offer for an internship at Haufe** but due to the challenges of relocating to Timișoara we had to decline the opportunity.

1st place, *Hermes Hackaton, Cluj-Napoca*

10/2022

As a result of winning the 1st place we secured an **internship at fme Romania**.

</> VOLUNTEERING

Stiri Bazate, *N.G.O.*

2025
Remote

Stiri Bazate is a volunteer-driven news organization that began as an Instagram initiative by young journalists. I joined to help build its **website** from scratch, l**eading a team of 4 developers** to deliver a **modern, custom platform** with **it's own Content Management System**, enabling the addition of unique features.

What I learnt: To Lead a team of 4 developers towards a shared goal
Technologies: React, TypeScript, Vite, ShadCN, Tailwind, Python, Flask, FastAPI, Redis, MongoDB, Gunicorn, Nginx, Docker, AWS Elastic Container Service, AWS S3, Cloudflare.

Team Xeo, *robotics team*

I took part in First Tech Challenge, the biggest robotics competition for highschool students in the world. As a programmer for the team I **wrote code for our robot in Java** and earned valuable experience programming embeded systems and electronics. I also **built the team's website** and contributed on the development of a **web app for an event we organized** which included different games, challenges, a C.T.F and a live leaderboard for all the teams to see their rankings. **The web app had 100 concurrent users** during the 3 days of the event. The team won numerous national and international prizes.

What I learnt: How to work together as a team with multiple technical and non-technical departments, to document my code and to work under pressure.
Technologies: Java (Rev Expansion Hub, Android), HTML5, CSS, Bootstrap, Javascript, Python, Flask, MongoDB, Git.

📁 PROJECTS

Terminal platformer game — 2018
C++ terminal based platformer game using ANSI sequences to redraw scenes, with keyboard input handling and basic collision detection, built while **learning OOP and multi-threading concepts.**

MiniBot — 2019
For my highschool's science fair I built a small robot made out of 2 servos attached to wheels, a camera and a Raspberry Pi that could be controlled via a web page accessed using a QR code.

Smart leds — 2019
ESP8266 based smart LED lights controlled via **WebSockets** and a **React Native mobile app**, with music-reactive effects using the **Spotify API**.

Unofficial Dex online API + Word chain Discord bot — 2020
Developed a Discord bot for playing word chain (Fazan) with friends by scraping Dex Online to score optimal words. Noticing the absence of an official Dex Online API, I extended the project to create an unofficial Python API.

Hackintosh Projects – HP Laptop & Custom PC — 2020
After using different Linux distros i wanted to try MacOS so i used OpenCore to get a dual boot hackintosh & Windows system running on my non Apple laptop and PC.

New Year's Cabin Finder Bot — 2021
Built a **Python + Selenium bot** to automate the process of finding and contacting cabin rentals via WhatsApp, sending bulk availability requests and streamlining the search, successfully securing a booking after **150+ automated messages.**

DexOS - Custom Operating System — 2022
Built a simple OS from scratch following Nick Blundell's guide, working with **BIOS, Assembly, and low-level programming** to understand OS concepts.

Programming languages speed comparison — 2023
Implemented a prime number finder algorithm in 25 programming languages to compare performance and syntax, with a focus on exploring newer languages like **Go, Rust, and Zig**. Built a **Flask** dashboard with bar charts to visualize execution time and binary size, backed by a Python automation script for compiling and running programs. Designed for extensibility with a **Config.json based system** for adding new languages, and containerized with **Docker** for reproducibility.

Terminal YouTube Video Viewer — 2024
Streamed YouTube videos directly in the terminal by converting video frames into **colored character output** while playing **synchronized audio**.