Luka Nadiradze

Software Engineer

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PROFESSIONAL EXPERIENCE

Software Engineer
The Works Research Institute ⌗
02/2023 – present

- **Collaborated with researchers** to design and successfully implement signal processing and statistical analysis tasks for multiple research projects.
- **Created cloud solutions** on AWS, worked on streamlining data flow, created APIs and databases, and automated code deployment.
- **Developed interactive GUI and web interfaces** for data visualization using Python.
- **Utilized various Data Science libraries** to write scripts and CLI applications to pre-process and classify large amounts of data.
- **Optimized and maintained existing projects**, improved existing database structures, refactored old codebase, and created extensive documentation.
- **Created and managed** Linux servers, CI/CD pipelines, Docker builds, development environments, and automated tests.

Researcher
Muskhelishvili Institute of Computational Mathematics ⌗
11/2023 – present

- **Working on Master's Thesis** with colleagues from DFKI Research Center.
- **Participating in GAIN Project** funded by the European Union HORIZON.
- **Attended GMU Conference,** presented "Cross-Disciplinary Insights in AI and Neuroscience".
- **Hosted GAIN Summer School**, presented "EEG Dataset for Event Related Potentials".

Full Stack Developer
Free University of Tbilisi ⌗
09/2022 – 02/2023

- **Designed and implemented** a modular stack in TypeScript for course administration.
- **Mentored up to 300 students** in the Digital Technologies course.
- **Created a web app** for teaching programming, written with vanilla Javascript.
- **Developed a React app** for browsing upcoming exams, using Google API library.
- **Created a GitHub organization** to host tools developed by students.

Lead Game Developer
DeFi Land ⌗
08/2021 – 09/2022

- **Created a large-scale Unity game** on WebGL, integrating multiple DeFi platforms from Solana Blockchain such as NFTs, wallets, staking, and exchanges.
- **Managed to achieve the largest contributions to the codebase**, including UI, camera, animation systems, world interactions, customization, mini-games, progression and other gameplay features.
- **Designed APIs with other developers** and successfully integrated them with Unity. Worked with backend, 3D, UI, and sound design teams on a daily basis.
- **Led a team of Game Developers**, overseeing tasks on Clickup. Conducted code reviews, engaged in pair programming, mentoring, and continuous refactoring.
- **Set up pipelines** for asset management, development/production environments, testing, authentication, build scripts, editor tools.
- **Optimized** rendering and network efficiency, managed third-party packages, implemented robust error handling, often fixed WebGL-specific issues.

Junior Game Developer
Golden Fox ⌗
03/2021 – 08/2021

- **Developed UI, progression system and animations** for the mobile game in Unity.

Research Assistant
Free University of Tbilisi ⌗
02/2020 – 01/2021

- **Created simulations for periodic arrays** using CST Microwave Studio that aligned with the theoretical expectations.

- **Utilized Python and MATLAB** to organize and process data, including rewriting of some FORTRAN scripts with Python.

Teaching Assistant   09/2018 – 02/2019
Free University of Tbilisi ↗
- **Mentored Computer Science students** in Discrete Mathematics.
- **Assessed students' assignments**, quizzes, midterms and finals.

EDUCATION

M.S. in Neuroscience
Ilia State University ↗

2023 – present
- **Received 100% state grant scholarship** based on performance in National Exams.

B.S. in Computer Engineering
Free University of Tbilisi ↗

2017 – 2023
- **Received 100% state grant scholarship** and internal funding by winning an engineering competition organized by the University.
- **Worked in multiple positions during studying**
  - Discrete Mathematics Teaching Assistant
  - Electromangetics project Research Assistant
  - Digital Technologies Assistant Developer

RELEVANT SKILLS

Programming Languages
Python, JS/TS, C#, Java, C++, C, MATLAB, R, Bash

Data Science
Numpy, Pandas, Matplotlib, Seaborn, Plotly, SciPy, Scikit-learn, OpenCV, PyTorch, JupyterLab, Colab

Frontend
Plotly, Dash, Tkinter, React, MUI, Chakra UI, Styled Components, Bootstrap, HTML/CSS

Backend
Node.js, Express, EJS, FastAPI, Flask, MySQL, MongoDB, Redis, ORMs, Authentication, Sessions, REST, GraphQL, Jest, Pytest, Mocha/Chai

Cloud
Amazon EC2, S3, Lambda, RDS, DynamoDB, SQS, SNS, CloudFront, IAM, ECS, CloudWatch

Game Development
Unity WebGL, Animations, Asset Bundles, Mobile, Physics, Doozy UI, DOTween, Odin

Tools
Git, Docker, GitHub Actions, Package Managers, Virtual Environments, Copilot, JetBrains Products, Nginx, Postman, Vim

Concepts
Design Patterns, CI/CD, Microservices, Serverless, Twelve Factor Apps, Test Driven Development, Event Driven Architecture, SOLID, OOP, Security, Agile

RELEVANT PROJECTS

Resonant Phenomena of Sound Waves and their Expression in Physiology ↗
Latest paper we published under The Works, exploring effects of sound intervention on human wellbeing

EEG Data Analysis ↗
Project about various EEG data processing and classification methods

Freecar ↗
A Raspberry Pi-powered car that can be controlled via a web interface and has various fun features

Ground Penetrating Radar ↗
Ground Penetrating Radar data processing and classification to detect buried objects in the ground

Fluffy Computer ↗
16-bit computer implemented in Logisim, which follows the architecture of the Hack computer

Battleship Simulator ↗
Battleship game winning strategy implementation based on DataGenetics' battleship analysis article

Spectrogram Live ↗
Real-time customizable spectrogram written in React

Lights Yes ↗
Mathematical analysis and solution search for the puzzle game called Lights Out

Ambience ↗
Discord bot designated to help you focus on work with the use of calming background noises

Stoic Bot ↗
Discord bot that provides stoic wisdom on command

The FDTD Project ↗
MATLAB scripts for performing 1D and 2D Finite-Difference Time-Domain (FDTD) simulations

Auditory Evoked Potentials ↗
Neurophysiology report about Auditory Evoked Potentials and its practical uses, using the data captured with Unicorn Hybrid Black EEG device.

Exam Schedules ↗
API service that provides exam schedules for students

GPA Calculator ↗
Highly customizable GPA calculator for Freeuni and Agruni students