Mateusz Kojro

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EXPERIENCE

National Center for Nuclear Research – Cosmic Ray Laboratory, Łódź —
Software developer (scholarship recipient for the DIMS project)

May 2021 - March 2022

Main technologies used: Python for algorithm development and some backend programming (integrating with labeling software and monitoring application), Linux and GitHub

- Developing live macroscopic dark matter and meteor detection system for night sky observations at the Utah desert
- Developing automatic testing and labelling system used for algorithm evaluation and training machine learning models
- Working on in house system monitoring software
- Working in an international research group

CERN/Intel collaboration, Geneva —Software developer

March 2022 - May 2023

Main technologies used: C++ for main emulator development, Python (Pandas and Seaborn) for data analysis and visualization, Linux and GitLab

- Creating low latency –high throughput caching solution based on low level DAOS C API
- Performance evaluation of Intel DAOS (Distributed Asynchronous Object Storage) system in the context of proposed upgrades for ATLAS detector at the LHC (Large Hadron Collider)
- Working on the top 500 rated supercomputer (Intel Endeavor cluster)
- Working with and improving existing ATLAS Dataflow emulation software
- Continuous collaboration with Intel R&D team

Freelance Full-stack web developer, Remote —
Software developer

June 2020 - November 2021

- Creating and managing website for external company
- Multithreaded REST server implementation using Golang
- Frontend implementation using React.js framework with Typescript
- Website architecture design using client-server architecture

SKILLS

Programming:
C++, Python, Go, Rust, JavaScript/TypeScript, basics of Julia, R and SQL

Frameworks and libraries:
PyTorch, TensorFlow, Intel DAOS, SciPy, Pandas, Matplotlib/Seaborn, OpenCV basics of Flask, React and Express

DevOps:
Linux, Git, Docker, Docker Compose, GitHub Actions and GitLab CI/CD

LANGUAGES
Fluent in English and native Polish

- Managing server architecture using Google Cloud

EDUCATION

University of Łódź, Bachelor — Computer Science
(Last semester)

October 2019 - March 2024 (Expected)

- Extended machine learning course (deep learning using PyTorch and TensorFlow, reinforcement learning, decision forests)
- Extended object-oriented programming course in C++
- Graphics programming course with OpenGL, Vulcan and Three.js
- Two time Rector Scholarship for best students recipient

University of Łódź, Bachelor — Physics
(2 years completed, suspended)

October 2020 - Suspended

- Advanced math course (multivariate calculus, differential equations, linear algebra)
- Statistics course
- Introduction to solid state and atomic physics

PUBLICATIONS

Poster: Investigation of the Intel DAOS distributed object store in the context of the ATLAS TDAQ Phase II upgrade

ATLAS week poster session – 2022-06

Conference presentation: Study of high-throughput distributed caching system based on Intel DAOS for ATLAS Phase-II Dataflow

2023 CERN Openlab Technical Workshop – 2023-03

PROJECTS

Basic deep learning library
https://github.com/mateuszkojro/neural-network-library

- Using CMake for project configuration
- Implementing simple deep neural network based algorithms based on linear algebra

Simple interpreted programming language
https://github.com/mateuszkojro/programing-language/

- Implementing recursive backtracking interpreter for simple programming language
- Generating C++ documentation using Doxygen

Basic Chess engine

- Implementation of custom algorithm based on Alpha-Beta pruning

Audio visualizer
https://github.com/mateuszkojro/audio-visualizer

- Fourier transform implementation
- Working with audio files on low level
- Working with SDL

Video player with Lua scripting support
https://github.com/mateuszkojro/video-player/

- Embedding Lua scripting language into an application
- Working with video files on low level
- Creating GUI's using QT
- Working with OpenCV