

# Mateusz Kojro

## Basic Information

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<b>Name:</b>	Mateusz Kojro
<b>Birthday:</b>	30.06.2000
<b>Citizenship:</b>	Polish
<b>Email:</b>	<a href="mailto:mateuszkojro@outlook.com">mateuszkojro@outlook.com</a>
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<b>Affiliation:</b>	University of Lodz, Faculty of Physics and Applied Computer Science
<b>Areas of expertise:</b>	Data analysis and visualization in Python (Pandas, SciPy, OpenCV, TensorFlow) Software Engineering in Python and C++
<b>Competent with:</b>	R, MATLAB, Julia, React, Typescript, Flask, CMake, Docker, Git
<b>Languages:</b>	Polish, English

## Experience

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### GMV Innovating Solutions

Warsaw (hybrid), May 2023 - Now

- Developing C++ based digital-twin simulation software for next generation meteorological satellites produced by European Space Agency in collaboration with Eumetsat
- Performance and validation campaigns
- Working with technical documents conforming to ECSS standards
- Continuous collaboration with sub-contractors

### CERN – ATLAS experiment

Geneva (hybrid), March 2022 – May 2023

- Performance evaluation of Intel DAOS (Distributed Asynchronous Object Storage) as high performance low latency caching system in the context of proposed upgrades for ATLAS detector at the LHC (Large Hadron Collider)
- Developing emulation software integrating with Intel DAOS and allowing for creating model traffic produced by the ATLAS detector (C++)
- Performance analysis, data analysis visualization and presentation using standard Python toolset (Pandas, Seaborn, Panel)
- Performance evaluation campaigns utilizing top 500 rated supercomputer (Intel Endeavour cluster)
- Continuous collaboration with Intels' R&D team

### National Center for Nuclear Research – Cosmic Ray Laboratory

Lodz (Hybrid), May 2021 – February 2022

- Developing live macroscopic dark matter and meteor detection system for night sky observations at the Utah desert
  - Design and implementation of classical and AI based computer vision algorithms aiming for online event detection
  - Python based stack – Pandas, SciPy, OpenCV and TensorFlow
- Developing automatic testing and labelling system used for algorithm evaluation and training machine learning models.
  - Backend application integrating with Label Studio allowing for manual event preview generation for event evaluation
  - Python based stack – Flask, OpenCV, Matplotlib, Docker
- Working on in house system monitoring software
- Working in an international research group

## Freelance Full-Stack Developer

Remote, June 2020 – November 2021

- Creating and managing website for external company
- Multi-threaded REST server implementation using Golang
- Front-end implementation using React.js with Typescript
- Managing server architecture using Google Cloud

## Publications

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### Primary author

- **Investigation of the Intel DAOS distributed object store in the context of the ATLAS TDAQ Phase II upgrade (POSTER)**  
ATLAS Week poster session (2022-06)
- **Study of high-throughput distributed caching system based of Intel DAOS for ATLAS Phase-II Dataflow (Conference talk)**  
Openlab technical workshop 2023 (2023-03)

### Co-author

- **Meteor observation with the DIMS project: sensor calibration and first results**  
Proceedings of the IMC (2021-11)
- **DIMS Experiment for Dark Matter and Interstellar Meteoroid Study**  
37th International Cosmic Ray Conference (ICRC2019), volume 37 (2021-07)
- **Characterization of the DIMS system based on astronomical meteor techniques for macroscopic dark matter search**  
37th International Cosmic Rayconference (ICRC2019), volume 37 (2021-07)
- **Solar Power Supply and Environmental Control System for DIMS Experiment**  
37th International Cosmic Rayconference (ICRC2019), volume 37 (2021-07)

## Education

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### Computer Science Degree (Last semester of a bachelor)

- Two-time Rector Scholarship for best students recipient

- Extended machine learning course  
(deep learning, reinforcement learning, decision forests)
- Advanced mathematical methods and statistics courses