Mariia Eremina

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PROFESSIONAL EXPERIENCE

Software Engineer
Sep 2024 – Present

MIT — Massachusetts Institute of Technology
Remote

- Developing a clinician-focused full-stack web application to combine Harvard Medical School's state-of-the-art AI projects, optimized for deployment in hospital settings, using Python, Flask, JavaScript, and React
- Onboarding new team members, enhancing team dynamics and ensuring a smooth transition into their roles

Co-Founder & Lead Software and Computer Vision Engineer
May 2024 – Dec 2024

CarGo Relay ⧉ — Sustainable AI-based Last-Mile Delivery EPFL-based Startup
Lausanne, Switzerland

- Organized cross-functional team work with Jira as the management tool and developed a cross-platform mobile application for iOS and Android using React Native, MongoDB, and Firebase

Computer Vision Research Engineer — Deep Learning
Mar 2024 – Sep 2024

MIT & Harvard ⧉ — #1 and #4 ranked universities (globally)
Boston, USA

- Increased the co-registration speed of video frames by 40x through the development of a new spline-based algorithm and utilizing flow matching for high-precision cardiovascular surgery hardware, using Python, Tkinter, PyTorch and OpenCV
- Engineered a robust cross-platform application for precise video co-registration, efficiently managing diverse displacements in medical imaging and reducing manual work per patient from 3 hours to just 5 seconds
- Optimized video quality using models such as Stable Diffusion Inpainting, Segment Anything Model (SAM), and CLIPSeg
- Adapted applications for a cross-platform compatibility (macOS, Windows, Linux) to integrate with any medical hardware

Software & Machine Learning Engineer
Jun 2023 – Mar 2024

Maxon Group — Swiss manufacturer and supplier of high-precision motor systems
Lucerne, Switzerland

- Implemented custom anomaly detection algorithms, combining different machine learning techniques like Autoencoder and Siamese network for motor quality detection, using Python, OpenCV, and PyTorch
- Led a cross-functional team of 2 software engineers, 1 machine learning engineer, and 2 external AI experts from CSEM to design, develop, and deploy a motor quality detection system, fostering a well-organized and positive team environment
- Created a customer-focused website for motor quality detection using FastAPI, JavaScript, PostgreSQL and Docker
- Wrote pytest unit tests to achieve over 90% code coverage, ensuring the reliability and robustness of the system

Machine Learning Engineer
Dec 2022 – May 2023

AGORA Cancer Research Center ⧉
Lausanne, Switzerland

- Developed a deep learning framework with YOLOv5 and DeepSORT to detect and track cancer organoid stages, reducing manual work time by 50%, and supporting research at CHUV (Lausanne's research hospital)
- Collaborated closely with interdisciplinary teams to gather and process large-scale imaging data (∼150 TB), leveraging this information to enhance the accuracy and precision of the cancer detection

EDUCATION

Master Thesis in Computer Science
2024

MIT — Massachusetts Institute of Technology
Boston, USA

- Master Thesis Title : *"Landmark-Based Co-Registration of Coronary Computed Tomography and Intravascular Images"*

Master of Computer Science & Life Science
2021 – 2024

EPFL — Swiss Federal Institute of Technology
Lausanne, Switzerland

- Relevant coursework: AI Product Management, Machine Learning, Applied Data Analysis, Computer Vision, Computational Photography, Mathematics of Data, Deep Learning for Autonomous Vehicles, Image Processing for Earth Observation
- Organized annual hackathons ⧉ sponsored by AWS, UBS, Logitech, SBB, Swisscom, Swissquote, and Huawei

Bachelor of Biotechnology
2017 – 2021

MSU — Lomonosov Moscow State University
Moscow, Russia

SKILLS

Programming Languages: Python, JavaScript, FastAPI, SQL, MATLAB, R
Software & Frameworks: PyTorch, TensorFlow, React, React Native, Keras, Flask, Optuna, Wandb, Fiji, (La)TeX
Libraries: pandas, NumPy, OpenCV, scikit-learn, scikit-image, SciPy, NLTK, Diffusers
Tools: Git, Linux, Docker, AWS, Google Cloud, Azure, MongoDB, Firebase, Postman, Visual Studio Code