



Andrey Yershov

Computer Vision Engineer

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Profile

Passionate for electronics and programming, skilled in a variety of interdisciplinary engineering fields including robotics, biophotonics, deep learning, and machine vision. Proven experience of effectively managing small teams to achieve project goals. Love solving real-world problems that help people and staying up-to-date with the recent technological advancements in the industry.

Experience

Aug. 2022
- Present

Computer Vision Software Developer - Xsight Optics GmbH - Jena, Germany

Medi-tec company developing optical sensors for contactless measurement of health-related parameters. Part of international biotechnology focused conglomerate with €160M+ market cap.

- Developed 2 iterations of a pipeline for facial detection and skin extraction for a medical product prototype, allowing the company to proceed to clinical testing in over 100 patients.
- Implemented software solution increased patient face detection accuracy from 63% to 92% in complicated use cases, compared to a previous solution from outsourced company.

Mar. 2022
- Present

Graduate Photonics Researcher - Institute for Applied Optics and Biophysics - Jena, Germany

Scientific institution focused on optical health tech and is oriented towards modern medical challenges.

- Compiled an image segmentation model based on Vision Transformers (ViT) for subcellular biological structure multiplexing and tracking with 95%+ precision on real data. Nature Methods manuscript is in the process.
- Resolved an issue of training data deficit by exploiting transfer learning on comparable non-biological input modality, decreasing fine-tuning time by 87% from 24 to 3 hours.
- Created a Single-Molecule Localization Microscopy framework for neuromorphic event sensors, increasing the computed image resolution from 65 nm to 27 nm.
- Developing a baseline method for 3D image reconstruction using Diffusion generative model.

May 2019
- Sep. 2021

Undergraduate Robotics Researcher - Nazarbayev University - Astana, Kazakhstan

Leading Eurasian research university aimed at innovation in science and engineering.

- Implemented a deep learning model for action recognition from video with 97%+ accuracy on a 7 class dataset, followed by an iteration for age and gender estimation from actions.
- Developed an educational reinforcement learning setup with snake-like robot on ROS. The constructed system was used for teaching 150+ undergraduate students.

Sep. 2018
- April. 2021

Regional Technical Manager - eduation.kz - Astana, Kazakhstan

Dominant Ed-tech startup in Central Asia with, 8000+ students and \$1.7M in total sales in 2020.

- Strategically managed a 5 pers. team for educational course sales with \$50K of total spending.
- Increased the monthly number of active students from 60 to 450 with total revenue \$300K.

Aug 2016
- Sep. 2018

Freelance electronics repair specialist - Astana, Kazakhstan

Laptop and consumer electronics service for food during early undergraduate years.

Education

- 2023 MSc Photonics** - Abbe Center of Photonics - Jena, Germany
Top research institution in the field of Photonics and light-matter interaction.
- Deutscher Akademischer Austauschdienst (DAAD) scholarship.
 - Thesis: "Sub-diffraction-limit imaging using neuromorphic event sensing". Constructed and programmed an innovative event camera based super-resolution microscope. Resulted in 200% increased temporal resolution improvement with advanced molecular fingerprint data extraction.
- 2021 BSc Robotics and Mechatronics** - Nazarbayev University - Astana, Kazakhstan
Leading Eurasian research university aimed at innovation in science and engineering.
- Full educational scholarship, president's stipend, dean's list recipient.
 - Thesis: "Data-Driven transfer function generation for DC motor in a Robot". Programmed a microcontroller setup to collect electromechanical response data for 89% improvement in control.

Pet Projects

Search & Rescue Octocopter (UAV) development

Designed and constructed educational modular drone based on an open source autopilot PixHawk with €20K funding at Lichtwerkstatt Jena.

Open Source Contributor

Contributed to repos of OpenMMLab, Robotics Group of Uni Zurich, Julia Programming Language.

Shell ECO Marathon participant

Secured \$10K funding from Shell for design and construction of energy effective battery powered car. Co-managed a team of 7 people in the process of car development, leading to participation in the final race among 300+ international teams.

Mentoring/volunteering

Academically mentored high-school youth and freshman university students by teaching the most important skills – ability to self-study, managing time and setting adequate priorities. Sharing the knowledge is an important part of my ideology.

Skills and Certifications

Programming: Python, C, C++, Pytorch, openCV, Linux, bash, git, VM

Hardware: PC architecture, dynamic vision sensors, FPGA, microcontrollers, networks

CAD: rapid prototyping, 3D printing (FDM, SLA)

- Hackathon "Retail Big Data" winner: developed product recommendation system for *Magnum* C&C retail chain with total revenue of \$800M in 2021.
- Graduated 'QWANT' project-based software engineering school (part of School 42 network).
- Completed "Machine Learning", "Math and Python for Data Science" specifications on Coursera.
- Completed "Hardware technician" certificate from Cisco, a world-class IT conglomerate.

Languages

 English

Full working
proficiency

 German

Limited Working
Proficiency

 Kazakh

Native / Bilingual

 Turkish

Limited Working
Proficiency

References

- Prof. Dr. Christian Franke, Digitized Microscopy Lab Head
- Prof. Dr. Rainer Heintzmann, Bio-Nanoimaging Lab Head

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