

# Yulia Yakovleva

## Software engineer

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### Main skills

C++ (Eigen), Python (PyTorch, Jupyter, NumPy, Keras, TensorFlow, Sklearn), Git, ROS, Linux, Machine Learning, Deep Learning, HPC, Computer Vision, NLP, LLMs

### Experience

November 2022 – **Machine learning engineer**, *Stability.ai*, Amsterdam

Now I worked on the following projects:

- Stable-Finetuning (Python, PyTorch, CUDA, diffusion models, HPC): I was mostly focused on whole preprocessing and training algorithm optimization. With my effort, the fine-tuning process became multiple times faster while the size of model increased. I managed to "accelerate" SAM to process big batches of images in less than 1 second. To comply with regulation, I managed to build a facial fine-tuning without facial keypoints detection. During the developed process, I was migrating the service between multiple generations of fine-tuned models and backends.
- Stability models API (Python, PyTorch, CUDA, diffusion models, AWS, HPC): Similar effort but without direct involvement into algorithms development.
- LLM-related project (Python, PyTorch, CUDA, LLMs, axolotl, HPC).

March 2022 – **Machine learning engineer**, *Rainbow.ai*, Warsaw

September 2022 ○ I worked on applying deep learning models for weather forecasting (Python, PyTorch, Weather RADAR data).

November 2021 – **Machine learning engineer**, *Descriptor.ai*, Remote/Moscow

February 2022 ○ I created a few good-performing voice sentiment analysis models (Python, NumPy, TensorFlow, Keras, Audio data).

July 2021 – **Machine learning engineer**, *MediaZona*, Remote/Moscow

October 2021 ○ AI Text Generation (NLP, Python, NumPy, TensorFlow, Keras, Transformers, GPT): I worked on conditional text generation with neural networks. My responsibilities included both engineering/coding and interaction with non-tech employees of MediaZona on translating their non-tech requirements into "tech language", finding the data and getting a feedback on text generators' work.

- March 2018 – **Software engineer**, *Yandex Self-Driving Cars*, Moscow
- May 2021
- Sensor diagnostics software (ROS, C++, Python, NumPy): I created data quality checking software modules for cameras and LiDARs.
  - Traffic lights recognition software (ROS, C++, Python, NumPy, TensorFlow, Keras).
    - I worked on improvement of traffic lights recognition and tracking pipeline,
    - learning data mining, pre-processing and datasets preparation,
    - created, learned and deployed multiple iterations of deep neural networks, which are working now on hundreds of self-driving cars made by Yandex.
- October 2015 – **Robotics researcher/developer**, *Institute for Information Transmission Problems RAS (Kharkevich Institute)*, Moscow
- August 2017
- (C++, Python, ROS, Eigen, Computer Vision, Kalman filters) I worked on self-driving car prototype positioning and control software including: system launch tool to replace ROSLaunch, positioning and control systems (C++, Python, ROS, Eigen, Computer Vision, Kalman filters).
- Self-driving car prototype positioning and control software. I created or worked on the following modules:
    - System launch tool to replace ROSLaunch (Python, ROS, Paramiko);
    - Local positioning system (C++, Eigen, Kalman filters);
    - Trajectory control system (C++, ROS);
    - Developers' web-interface (Python, JS (Leaflet.JS, Bootstrap), ROS);
    - Road markup-relied localization system (C++, ROS).
  - Initiative works in deep learning for robotics control (just for fun).
- June 2015 – **Junior web-developer**, *WETA Group*, Remote
- October 2015
- Full-stack web-development
- Information security system web-interface:  
I developed two web-applications using Django non-rel backend and JS frontend with MongoDB database;
- July 2013 – **Junior control systems developer**, *Modern Signal Processing and Control Technologies R&D Laboratory*, Chelyabinsk
- June 2015
- Turboshift engine control system development:
    - I performed Turboshift math modelling using MATLAB/Simulink,
    - participated in control system design, test stands assembling and commissioning;
  - Self-driving car prototype trajectory control system:
    - I proposed control algorithms and performed math modelling using MATLAB/Simulink,
    - implemented these Algorithms (C++, control unit with STM32 and NuttX RTOS),
    - performed HIL testing using Python and NumPy and participated in field tests.
  - I developed UAV test stand software: Scilab, interaction with National Instruments data acquisition system.

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## Patents

- 2020 **Method of and system for determining traffic signal state**  
Artamonov, Kalyuzhny, Yakovleva
- US Patent US20210201058A1, application at 2020.09.28, granted.
  - European Patent EP3842996A1, application at 2020.10.14, pending.

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## Talks

- 2019 **Myths about Self-Driving Cars**, *Presented at WTM Moscow*  
An interactive talk in Russian about self-driving cars architecture, sensors and testing.
- 2019 **Traffic Lights in Yandex Self-Driving Cars**, *Presented at Yandex Self-Driving Meetup 2019, PyLadies Moscow and PyLadies Kazan*  
A short talk in Russian about the difficulties of traffic lights recognition and about Yandex Self-Driving Cars traffic lights recognition pipeline.
- 2020 **Data mining in Yandex Self-Driving Cars**, *Presented at Pytup Moscow*  
A short talk in Russian about data processing pipeline in Yandex Self-Driving Cars project.
- 2023 **How does ChatGPT work?**, *Presented on a YouTube*  
A talk in Russian about how ChatGPT works for tech folks who aren't working in AI.
- 2023 **What's going on in AI world**, *Presented in Warsaw*  
A popular talk in Russian about recent history and trends in AI world for non-tech people.

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## Education

- 2010–2015 **National Research South Ural State University**;  
Computer Technologies, Control and Radio Electronics Faculty;  
Automation and Control Department;  
MEng with honours.
- 2015–2017 **Moscow Institute of Physics and Technology (State University)**;  
Department of Innovation and High Technologies;  
Cognitive technologies sub-faculty;  
MSc in Computer Science.

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## Volunteering

- May 2020 – now **Web developer/data analyst**, *OVD-Info*, Remote  
OVD-Info is an independent human rights media project. I'm participating in development and support of information collection and analysis systems for OVD-Info using SQL, Python and Django.
- Jan 2021 – now **Technical volunteer**, *Memorial*, Remote

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## Languages

- Russian Native speaker  
English Fluent  
Dutch Beginner  
German Beginner  
Tatar Beginner

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## Pet projects

**rTerm**, *github.com/robolamp/rTerm*  
Fake JS-based UNIX term for my personal page.

**Random three body problem bot**, *github.com/robolamp/3\_body\_problem\_bot*

A program which is simulating the behavior of random three body system multiple times and publishing animation of the most interesting one every 12 hours at Telegram channel.

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## Interests/hobbies

wildlife photography, alpine skiing, cross-country skiing, books, jogging