

# Yulia Yakovleva

*Software engineer*

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## Experience

March 2018 – **Software engineer**, *Yandex Self-Driving Cars*, Moscow.

- Now
- 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

- 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.

- 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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## Talks

**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.

**Myths about Self-Driving Cars**, *Presented at WTM Moscow.*

An interactive talk in Russian about self-driving cars architecture, sensors and testing.

**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.

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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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## Languages

Russian	Native speaker
English	Intermediate
German	Beginner
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## Skills

Main:

C++ (Eigen), Python (Jupyter, NumPy, Keras, Sklearn), Git, ROS, Linux, Machine Learning, Computer Vision.

Experience with:

Bash, C, OpenCV, JS (some outdated frameworks), Django, Docker, L<sup>A</sup>T<sub>E</sub>X, Dynamic systems math modelling, Matlab/Simulink.

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## Pet projects

**rTerm**, *[github.com/robolamp/rTerm](https://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](https://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

Space, alpine skiing, cross-country skiing, bicycling.