Oh, hello there ✋ Daniil is here
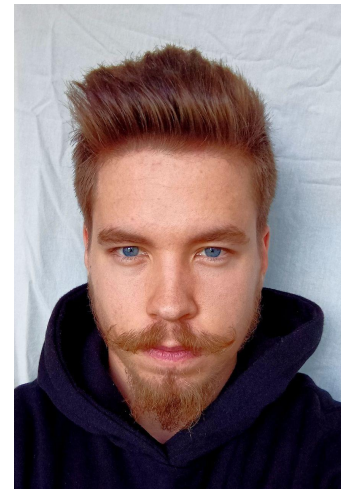
I am a robotics engineer 🤖

I'm interested machine learning and computer vision, clean code creation, product design and pipeline automation in robotics and self-driving vehicles in particular
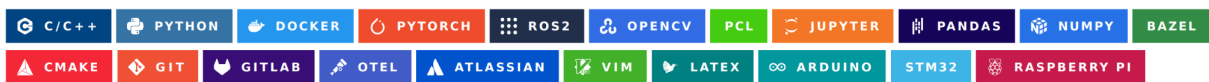
code: github.com/Sarrasor
telegram: @Sarrasor
email: sarrasorwork@gmail.com
linkedin: linkedin.com/in/daniil-burakov

Tech stack

C/C++ · PYTHON · DOCKER · PYTORCH · ROS2 · OPENCV · PCL · JUPYTER · PANDAS · NUMPY · BAZEL
CMAKE · GIT · GITLAB · OTEL · ATLASSIAN · VIM · LATEX · ARDUINO · STM32 · RASPBERRY PI

Experience

Senior Robotics Engineer @ Tech Solutions **tech solutions**

Nov 2022 - Present

We are developing robots for food delivery

My areas of responsibility include:
- Design and architecture for both software and hardware
- Functional safety framework
- Telemetry collection framework
- Actuator control algorithms implementation

Team lead of the motion planning team @ Ozon Technologies **OZON**

Jan 2022 - Jul 2023

I have led a motion planning team:

- The team has launched a self-driving truck on public roads. Video
- Created a technology development roadmap for the motion planning team
- Implemented motion planning testing framework
- Built knowledge base of the motion planning team
- Improved team communication, task management and code review processes

- Hired four members for the motion planning and control teams

Junior C++ developer @ Ozon Technologies **OZON**

Jul 2021 - Jan 2022

Worked on self-driving car's motion planning module:

- Proposed and implemented novel behavior selection architecture based on hierarchical behavior state machines
- Improved existing path and speed planning algorithms
- Improved lane following and lane change behaviors
- Implemented multiple trajectory evaluation metrics
- Implemented data collection and visualization framework

Research fellow @ Innopolis Robotics lab

Oct 2020 - Jul 2021

Worked on self-driving car behavior planning for my Bachelor's thesis and helped the self-driving team to improve motion planning capabilities of the autonomous vehicle:

- Tuned the routing module to make better routes
- Improved static vehicle side-passing capabilities and lane changing logic
- Resolved multiple incidents related to trajectory planning and routing
- Documented several legacy algorithms

Machine learning engineer @ Inference technologies **INFERENCE** technologies

Jul 2020 - Oct 2020

This was a summer internship with an extension. I have built an automatic pipeline for machine learning model training. After that, we have applied it for object segmentation and classification tasks:

- Proposed the architecture for the pipeline
- Implemented an MVP of the proposed pipeline
- Implemented multiple data denoising methods
- Tinkered with several SOTA classification, segmentation and detection models from Tensorflow Zoo. The proposed model was used in production

Computer vision and control engineer @ Innopolis Eurobot team 2019

Sept 2019 - Jun 2020

Took part in the preparation to the Eurobot 2019 competition:

- Implemented CNN plastic cup detection and 3D point cloud orientation recognition
- Implemented ArUco marker robot localization
- Combined localization with ROS dynamic window planner into a planning module
- Created Gazebo simulation of the competition field for testing purposes
- Calibrated and denoised several cameras

Research fellow @ Innopolis Robotics lab

Jan 2019 - Sept 2019

Did several projects during that time:

Robotic ball catcher project

The idea of the project was to use a robotic manipulator with a sack to catch a ball

- Implemented ball 3D position detection with the use of Computer Vision
- Implemented Kalman Filter for ball landing spot prediction
- Controlled UR manipulator arm via Python code

Camera stabilization project

Summer internship project. Stabilized a camera on a multi legged centipede robot

- Used ICP algorithm fused with IMU and visual odometry for pose estimation
- Smoothed camera path with spherical linear interpolation and crop window approach
- Acquired a patent and wrote a paper draft

3D scanner project

We have created a design of a 3D scanner based on a robotic manipulator

- Calculated FK and IK for a robotic manipulator and simulated it in Matlab
- Used point clouds from Kinect 2 to reconstruct a 3D model of an object
- Used photogrammetry technique to reconstruct a 3D model of an object

Education

Innopolis University

Bachelor's Degree
2018-2022

Robotics track

Personal Info

Like going to gym, playing guitar, and drinking tea with mint while reading

My daily insights [channel](#)

Languages

Russian: Native
English: C1

Pet-projects

Currently I'm working on the [Robotics Engineer Roadmap](#) project. The idea is to create a guide on what skills a robotics engineer has to have and how to become one of them