

# Anton Egorov

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## EDUCATION

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- **Master's with Honors in Information Systems and Technology (Robotics)** Moscow, Russia  
*Skolkovo Institute of Science and Technology (Skoltech); GPA: 5.0 out of 5.0* Sep. 2018 – Jun. 2020
- **Bachelor's with Honors in Electronics and Nanoelectronics (Power electronics)** Cheboksary, Russia  
*Chuvash State University; GPA: 5.0 out of 5.0* Sep. 2014 – Jun. 2018

## SKILLS

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- **Languages:** Python (Numpy, Sklearn, Scipy, Pandas, PyTorch, Tensorflow, Keras, OpenCV, Matplotlib), C++ (Eigen, pcl), Matlab-Simulink, Verilog and VHDL with FPGA
- **Frameworks & Tools:** Git, Docker (bazel, Cyber RT), ROS, Spark, Hadoop, Airflow, Grafana, Kafka, LaTeX

## EXPERIENCE

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- **Innopolis University** Innopolis, Russia  
*Lead Data Scientist, AI lab* Jan. 2023 – Jun. 2023  
Area: Oil and power line
  - Developed a CV algorithms for Power Line Insulator/Vegetation Defects detection using aerial images for Tatneft company
  - Developed a CV algorithms for Personal Protective Equipment (PPE) detection using aerial images*Stack:* Python (PyTorch, ...), CNN, Docker
- **OZON TECH** Innopolis, Russia  
*Middle Data Scientist (ML Matching team)* Mar. 2022 – Oct.2022  
Area: Developing product matching service
  - Improved Matcher pipelines
  - Developed pipeline for ozon - comp Toloka control cases generation*Stack:* PyTorch, Spark, Hadoop, Airflow, Grafana, Kafka.
- **Innopolis University** Innopolis, Russia  
*Middle Software Developer (Localization and Mapping (SLAM) team), Self-Driving Group* Jun. 2021 – Mar. 2022  
Area: Development of Software for Self-Driving Trucks.
  - Worked with fusion sensors techniques
  - Developed a module for LiDAR to LiDAR calibration
  - Worked on a 3D LiDAR map building
  - Analyzed data collected from sensor systems*Stack:* C++ (Eigen, pcl), git, Docker(bazel, Cyber RT), bash
- **Innopolis University** Innopolis, Russia  
*Engineer in SLAM and Perception teams, Autonomous Transportation Systems Lab* Nov. 2020 – Jun. 2021  
Area: Development of Software for Self-Driving cars.
  - Worked on a 3D LiDAR map building
  - Applied matching method for robust LiDAR odometry
  - Analyzed LiDAR data collected
  - Implemented an accurate Semantic Segmentation and 3D Object detection based on LiDAR Point Clouds
  - Worked on visual road signs tracking*Stack:* C++(Eigen, pcl), Python (PyTorch, ...), CNN, ROS, Docker, bash, Cyber RT

## • Skoltech

Moscow, Russia

*Graduate student in Intelligent Space Robotic Lab*

*Oct. 2018 – Jun. 2019*

Topic: Development of electronics hardware system of two autonomous mobile robots.

- Designed a printed circuit board for control Maxon motors, dynamixel and proximity sensors
- Prepared reliable the power supply system

*Adviser:* Professor [Dzmitry Tsetserukou](#)

## • Releematika

Cheboksary, Russia

*Electrical Engineer*

*Jul. 2016 – Sep. 2018*

- Developing analog electronic microprocessor parts for protection of power lines
- Worked on development of output impulse formation circuits of definite duration of output signal for the calibration device and holding tests of the complex protection from arc faults
- Development of a device: DC control relay for complex protection of power lines
- Developing of a fiber-optic sensor for detecting a short circuit in substations
- Ability to solder SMT PCB components using a microscope or reflow equipment
- Repairing PCBs and building cable assemblies with reliability and ruggedness in mind

## INTERNSHIPS

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### • SMART VIEWING

remote from Cheboksary, Russia

*R&D Intern*

*Aug 2020 – Nov 2020*

- Incorporating camera and scene geometry into deep learning models
- Applying CNN on spherical image representation to get a panoramic semantic segmentation for 3D indoor reconstruction and modeling

*Stack:* Python (PyTorch, ...), CNN.

### • The Robotics Institute, Carnegie Mellon University

Pittsburgh, PA, USA

*Graduate Research Intern in Biorobotics Lab (SLAM team)*

*Aug. 2019 – Jul. 2020*

Topic: Investigating a robust an orientation-invariant 3D Place Recognition methods to improve large-scale a real-world robot 3D mapping

- Developed a SphereVLAD, an orientation-invariant 3D Place Recognition (**77.91%** on Kitti, **89.28%** on Campus and **79.06%** on City) method via Spherical Harmonics in 3D LIDAR-based SLAM algorithm
- Designed a coarse-to-fine sequence matching module SeqSphereVLAD, to improve 3D place identification accuracy (**99.93%** on Kitti, **98.88%** on Campus and **99.04%** on City)
- Developed a Fast Sequence-matching Enhanced orientation-invariant 3D Place Recognition method
- Designed a PSE-Match, a Viewpoint-free Place Recognition Method with Parallel Semantic Embedding

In all experiments used average (%) of Average Recall @1 under 6 different orientation cases to evaluate place recognition accuracy

*Stack:* Python (tensorflow, ...), SphericalCNN.

*Advisers:* Professor [Howie Choset](#), Postdoc.[Peng Yin](#)

## • Skoltech

Moscow, Russia

*Summer Intern Student in Intelligent Space Robotic Lab*

*Aug. 2019 – Jul. 2020*

Topic: LocoGear: Locomotion Analysis of Robotic Landing Gear for Multicopters.

- Prepared reliable and stable hardware (designed a PCB and power supply system) for legs and flying systems
- Set up and calibrate the robot
- Performed real-time simulation on a quadruped mobile robot
- Presented a [poster](#) at annual Skoltech industry day 2019

*Stack:* Matlab-Simulink, Altium Designer.

*Advisers:* Professor [Dzmitry Tsetserukou](#), Dr.[Grigoriy Yashin](#)

- **Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)** Berlin, Germany  
*Undergraduate Summer Research Intern in the Institute for Solar Fuels* Jul. 2018 – Sep. 2018  
 Topic: Fabricate a solar water splitting device that produces hydrogen.
  - Fabricated a series of 2% Zn doped  $\pi$ -SnS coated with different buffer layers consisting CdS, Zn(O,S), MoS<sub>2</sub>, or Ag<sub>5</sub>SnS<sub>6</sub> of which the former two were coated with a 50nm layer of TiO<sub>2</sub>, since electrochemically unstable
  - Investigated the photoelectrochemical properties a series of  $\pi$ -SnS devices
  - Presented a [poster](#) to committee of HZB and wrote a scientific [blog post](#) as a result of work*Stack:* AA-CVD, Magnetron sputtering, XRD, PEC and SEM analysis.  
*Adviser:* Adviser: Dr. [Ibbi Ahmed](#)

## ADDITIONAL EDUCATION

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- **Tinkoff Bank Machine Learning project school** Sochi, Russia  
*Machine Learning Research Student (Computer Vision team)* Mar. 2021  
 Final Project: [Development of a Deepfake service](#) - animated image, generated from the source image/video according to the motion and facial expressions of a driving video of another person.
  - Applied the [First Order Motion Model](#) for Image Animation
  - Implemented Super-Resolution based on Efficient Sub-Pixel CNN*Stack:* Python (PyTorch, OpenCV, Numpy, Matplotlib), GANs
- **OzonMasters – Program in Data Science and Data Engineering** Remote from Innopolis, Russia  
*Data Science Student* Sep. 2021 – Jun. 2022  
**Relevant Subjects:** Machine learning, Numerical linear algebra, Algorithms, Python, Linux

## TEACHING EXPERIENCE

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- **Corporate University of Sberbank (SberUniversity)** remote from Innopolis, Russia  
*Instructor* Dec. 2022 - Jun. 2023  
 Conducted teaching for two student cohorts:
  - Data Science program (Advanced-level)-27 students, topic included: classical ML, DL, conducted project/HW consultancy
  - Data analysis for project managers(Basic-level) - 55 students, topic included: Python and Algorithms, Math, Introduction to Primary Data Analysis
- **Innopolis University** Innopolis, Russia  
*Teaching assistantship at Mobile Robotics and Autonomous Driving* Fall 2020
  - Taught and prepared homework assignments for students (**9 senior students**)
  - Topic included: particle filter, linear and non-linear Kalman filters
  - Conducted course's final examination
- **Innopolis University** Innopolis, Russia  
*Teaching assistantship at Introduction to Artificial Intelligence* Spring 2021
  - Taught and prepared homework assignments for students (**50 sophomore students**)
  - Topic included: Searching and Optimization, Tree Searching and logic, including basics of PROLOG as a language for answering such problems, Evolutionary Algorithms

## HONORS & AWARDS

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- Scholarship for PhD in Computer Science at **Oregon State University**, Prof. [Fuxin Li](#) (USA, 2021, 2022, 2023)
- Scholarship for PhD in Computer Science at **Luleå University of Tech.**, Prof. [George Nikolakopoulos](#) (Sweden, 2020)
- Scholarship for PhD in Computer Science at **Innopolis University**, Prof. [Alexandr Klimchik](#) (Russia, 2020-2022)
- Best Project Award in **Tinkoff Bank** ML project school, (Russia, 2021)
- Skoltech's academic mobility scholarship (Russia, 2019)

- 2nd place in the **world robotic competition** "Eurobot OPEN" Finals (France,2019)  
[Online]. Available: <https://truestory.skoltech.ru/reset>
- Winner of the National stage "Eurobot OPEN" (Russia, 2019)
- Best Design Award in Robotics course (Skoltech, 2019)
- Best Project Award in Control and Systems Engineering course (Skoltech, 2019)
- Scholarship for Master's in Robotics at **Skoltech**, Professor [Dzmitry Tsetserukou](#) (Russia, 2018)
- **HZB** 2018 Undergraduate [Fellowship](#), Dr. [Ibbi Ahmed](#) (Berlin, Germany)
- Participant of the 19th **World Festival** of Youth and Students (Russia, 2018)

#### LANGUAGE FLUENCY

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- Russian(native), English(fluent – TOEFL ITP)