ANTON EGOROV

3D localization and mapping with DL implementation in Robotics

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https://github.com/Antonskoltech https://www.linkedin.com/in/antegorov/

WORK EXPERIENCE & INTERNSHIPS

R&D Intern

SMART VIEWING

Aug 2020 – present London, England, United Kingdom

Research topic:

- Remote working on panoramic segmentation which combines semantics segmentation like tangent images with instance segmentation

R&D Intern in SLAM team (remote work from March)

Robotics Institute, Carnegie Mellon University

Aug 2019 – Jul 2020 Pittsburgh, PA, USA

Research topics:

- SphereVLAD: Orientation-invariant 3D Place Recognition via Spherical Harmonics in 3D LIDAR-based SLAM algorithm
- SeqSphereVLAD: Sequence Matching Enhanced Orientation-invariant Place Recognition
- Fast Sequence-matching Enhanced orientation-invariant 3D Place Recognition

Adviser: Prof. Howie Choset

Summer Intern Student

Intelligent Space Robotic Lab, Skoltech

Jun 2019 – Aug 2019 Moscow, Russia

LocoGear: Locomotion Analysis of Robotic Landing Gear for Multicopters

- Prepare reliable and stable hardware electronics for whole legs and flying systems
- Set up and calibrate the robot with new mechanics design and electronics using MATLAB tool and further make changes to the environment for programming STM32
- Perform real-time simulation on a quadruped mobile robot

Electrical Engineer Team Leader for Eurobot competition

Intelligent Space Robotics Lab, Skoltech

Oct 2018 – Jun 2019 Moscow, Russia

Development of electronics hardware system of two autonomous mobile robots-2nd place in the World robotic competitions "EurobotOPEN" Finals in France

- Designing a printed circuit board (PCB) for control Maxon motors, dinamixlels, proximity sensors and stepper
- The Robot power supply system
- Communicate with on-board PC via UART interface using STM32

Adviser: Prof. Dzmitry Tsetserukou

EDUCATION

Master's in Information Systems and Technology

GPA: 5 out of 5

Space and Engineering Systems, Skoltech

Sep 2018 – Jun 2020 Moscow, Russia

Adviser: Prof. Dzmitry Tsetserukou
co-Adviser: Prof. Howie Choset, CMU

Bachelor's in Electronics and nanoelectronics

GPA: 5 out of 5

Industrial electronics (Power electronics), Chuvash State University

Sep 2014 – Jul 2018 Cheboksary, Russia

PUBLICATIONS

- Peng Yin, Fuying Wang, **Anton Egorov**, Jiafan Hou, Ji Zhang, Howie Choset. "SeqSphereVLAD: Sequence Matching Enhanced Orientation-invariant Place Recognition," in *Proc. International Conference on Intelligent Robots and Systems (IROS 2020)*, Las Vegas, NV, USA, 2020, *has been accepted for publication*.
- Grigoriy A. Yashin, **Anton Egorov**, Zhanibek Darush, Nikolay Zherdev, and Dzmitry Tsetserukou. "LocoGear: Locomotion Analysis of Robotic Landing Gear for Multicopters,"in *IEEE Journal on Miniaturization for Air and Space Systems (J-MASS)*, vol. 1, issue 2, pp.138-147. Accessed: Sep. 2020. [Online]. Available: doi: `10.1109/JMASS.2020.3015525`, `https://ieeexplore.ieee.org/document/9163320/authors#authors`
- Peng Yin, Fuying Wang, **Anton Egorov**, Ji Zhang. "Fast Sequence-matching Enhanced orientation-invariant 3D Place Recognition," in *Proc. IEEE Transactions on Industrial Electronics journal (TIE)*, 2020, *under review*.

Summer Intern Student in the Institute for Solar Fuels

Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)

Jul 2018 – Sep 2018 | Berlin, Germany

Research topic:

- Optimizing buried junction cubic π-SnS photocathodes for water splitting (using AA-CVD, Magnetron sputtering, XRD, PEC and SEM analysis)-the goal is to fabricate a solar water splitting device that produces hydrogen

Adviser: Dr. Ibbi Ahmed

Electrical Engineer

Relematika

Jul 2016 – Sep 2018 | Cheboksary, Russia

- Developing analog electronic microprocessor parts for protection of power lines
- Experience in research of the complete cycle of development of analog electronic devices for the electric power engineering industry
- Experience in research and 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

Electrical Engineer

Sirius Educational Center

Jun 2017 – Aug 2017 | Sochi, Russia

- Project development using 3D printers and lasers
- Developing of Power Supplies
- Ability to solder SMT PCB components using a microscope or reflow equipment
- Repairing PCBs and building cable assemblies with reliability and ruggedness in mind

- Peng Yin, Ziyue Feng, Lingyun Xu, **Anton Egorov** and Bing Li. "PSE-Match: A Viewpoint-free Place Recognition Method with Parallel Semantic Embedding," in *Proc. IEEE Transactions on Intelligent Transportation Systems journal (T-ITS)*, 2020, *under review*.

SKILLS

ROS | PyTorch | Tensorflow | CNN | Git | Matlab-Simulink | Verilog and VHDL with FPGA | Altium Designer

Power supplies | LC, RC Autogenerators | Work with a soldering station and hairdryer

Python | Numpy | Matplotlib | LaTeX

LANGUAGES

Russian (native) ●●●●●
English (C1 level in TOEFL ITP) ●●●●○

HONORS & AWARDS

- Skoltech's academic mobility grant (Russia,2019)
- 2nd place in the world robotic competitions "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)
- HZB 2018 Undergraduate Fellowship (Berlin, Germany)
  [Online]. Available: `https://www.helmholtz-berlin.de/jobskarriere/sommerstudenten/index_en.html#`
- Participant of the 19th World Festival of Youth and Students (Russia,2018)