Shukrullo Nazirjonov

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EDUCATION

Friedrich-Alexander-Universität Erlangen-Nürnberg   Erlangen, Germany
Master of Science in Autonomy Technologies, (Perception, Control)   *Oct. 2023 – Mar. 2026 (expected)*

Nagoya University   Nagoya, Japan
Bachelor of Engineering in Mechanical and Aerospace Engineering   *Oct. 2018 – Mar 2023*

RESEARCH EXPERIENCE

Student Research Assistant   Oct. 2024 – Now
Chair of Automatic Control, FAU   *Erlangen, Germany*

- Developing an open-source alternative to Boston Dynamics's **interactive Spot**, implementing voice command capabilities and vision-language understanding with locally available models (Spot SDK, gRPC)
- Optimizing monocular visual odometry algorithms to enhance robot localization accuracy, focusing on improving upon Spot's existing GraphNav framework for autonomous navigation (Open3D,GTSAM)

Research Intern   Jul. 2023 – Sep.2023
Max Planck Institute for Intelligent Systems   *Tübingen, Germany*

- Developed and optimized a real-time perception system for TriFinger robot that improved inference speed, enabling reliable tracking of multiple objects in both simulated and real environments (TensorRT, Gymnasium, PyBullet)
- Investigated model-based reinforcement learning approaches for robotic manipulation, focusing on intrinsic motivation methods and efficient rotation representations for gradient-based optimization   **GDrive link**

Undergraduate Research Student   Oct. 2021 – Mar. 2023
Intelligent Robotics and Biomechatronics Laboratory, Nagoya University   *Nagoya, Japan*

- Developed and implemented tactile-visual feedback control system for robotic manipulation tasks, enabling successful in-hand object reorientation with 80% reliability using GelSight and DIGIT sensors on Tiago++ mobile manipulator(MoveIt,ROS 1)
- Contributed to open-source machine learning libraries for touch sensing(PyTouch) and published own library for tactile sensing (25+ stars)

INDUSTRY EXPERIENCE

Working Student Data Analyst   May. 2024 – Now
Philips   *Munich, Germany*

- Engineered and deployed automation solutions for clinical data processing pipeline, reducing manual workload by 40% and accelerating task execution 5x through Python-based workflow optimization(PyQt5, PyInstaller)
- Conducting statistical analysis on clinically sensitive datasets, preparing detailed reports for stakeholders

Robotics Software Engineer Intern   Sep. 2022 – Apr. 2023
AKA Intelligence   *Seoul, South Korea*

- Architected and deployed an autonomous navigation system for indoor greenhouse monitoring, enabling real-time 3D mapping and crop tracking using Jackal UGV (ROS 1, Gazebo)
- Enhanced crop monitoring accuracy by optimizing instance segmentation models (YOLO-X, Detectron2) and integrating DeepSORT tracking with point cloud processing, achieving 85% detection rate in varying lighting conditions(RTABMAP & Open3D)

PUBLICATIONS

- Yaonan Zhu, **Shukrullo Nazirjonov**, Bingheng Jiang, Jacinto Colan, Tadayoshi Aoyama, Yasuhisa Hasegawa, Boris Belousov, Kay Hansel, Jan Peters
"Visual Tactile Sensor Based Force Estimation for Position-Force Teleoperation", IEEE International Conference on Cyborg and Bionic Systems, 24-26 March 2023 (**Best Paper Finalist**)

Related Courses & Conferences

- Summer School (Ferienakademie) on "Deep Learning in Image and Video Processing", Sarntal, Italy: Summer school with top students from TUM, FAU, and University of Stuttgart **GDrive link**
- ROSCon 2022 Conference, Kyoto, Japan
- IEEE International Conference on Cyborg and Bionic Systems, Wuhang, China (remote)
- IEEE International Symposium on Micro-Nano Mechatronics and Human Science, Nagoya, Japan

Awards and Honors

- Nagoya University G30 Scholarship (2018 - 2022), Japanese Government MEXT Scholarship (2023 - 2025)

- JASSO Foundation scholarship (2018 - 2019), Open Robotics Foundation Travel Allowance(2022)

Skills

- **Robotics**: ROS1&2, Gazebo, PyBullet, Mujoco, Gymnasium

- **Programming Languages**: Python(Advanced), C++(Basic), MATLAB (Basic)

- **Tools**: PyTorch, HuggingFace, Docker, AWS S3, Github Actions

- **Embedded Systems**: Jetson Nano, Raspberry Pi

Volunteering

English and Programming Teacher

Alive English School

Sep. 2022 – Mar. 2023

Nagoya, Japan

- Designed and delivered engaging programming curriculum for 20+ primary school students, achieving 90% student participation rate through hands-on projects (Scratch, Lego Robotics)