

Tasbolat Taunyazov

National University of Singapore
PhD Student

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RESEARCH INTERESTS

Robot Manipulation and Tactile Perception.

EDUCATION

National University of Singapore (NUS) Aug 2018-Jan 2024 (expected)
Ph.D. in Computer Science
Advisors: [Dr. Yan Wu](#) (A*STAR) and [Dr. Harold Soh](#) (NUS)
Research Area: Tactile Exploration for Robot Learning

Nazarbayev University (NU) 2015-2017
M.S. in Robotics
Advisor: [Dr. Almas Shintemirov](#)
Thesis: Intuitive Teleoperation of 6-DoF Universal Robots Manipulators in Constrained Workspace using Nonlinear Model Predictive Control

Nazarbayev University 2011-2015
B.S. in Robotics and Mechatronics
Minor in Mathematics

AWARDS

IROS Best Paper Award 2021
NUS Research Achievement Award 2020
A-STAR SINGA PhD Scholarship 2018-2023

TEACHING EXPERIENCE

Mentorship at A*STAR

Ruihan Gao (now PhD at CMU) 2019-2020
Huifang Koh (now PhD at NUS) 2018

Teaching Assistant

CS5446/CS4246: AI Decision Making and Planning (*NUS*) Fall 2023
CS3264: Foundations of Machine Learning (*NUS*) Fall 2023
ROBT-402: Robotic/Mechatronic System Design (*NU*) Spring 2017
ROBT-407: Statistical Methods and Machine Learning (*NU*) Fall 2016

SERVICE

Conference Reviewer

IROS 2020-2024, ICRA 2020-2024, IJCAI 2019.

Journal Reviewer

Frontiers in Robotics and AI 2022, RA-L 2021-2022, TMECH 2020.

SKILLS

Robotics

Robotic Frameworks: ROS, YARP.

Open chain robots: UR5/10, KUKA LBR IIWA 7, Franka Emika Panda, iCub, Kuka YouBot.

Closed chain robots: Spherical Parallel Manipulator (SPM).

Artificial Intelligence

Generic ML frameworks: Pytorch, Tensorflow.

Event-based ML frameworks: Nengo, SLAYER.

Control: Non-linear Model Predictive Control, Convex Optimization.

REFERENCES

Yan Wu, Senior Scientist & Deputy Head
Robotics & Autonomous Systems, A*STAR Institute for Infocomm Research, Singapore
wuy@i2r.a-star.edu.sg

Harold Soh, Assistant Professor
School of Computing, National University of Singapore, Singapore
harold@comp.nus.edu.sg

Benjamin C.K. Tee, Associate Professor
Dep. of Material Science and Engineering, National University of Singapore, Singapore
benjamin.tee@nus.edu.sg

PUBLICATIONS

Patents

- 2023 Tee BC, See HH, Lim B, Soh H, **Taunyazov T**, Sng W, Ansari AF. U.S. Patent Application No. 18/010,656.

Journal Articles

- 2020 Shintemirov A, **Taunyazov T**, Omarali B, Nurbayeva A, Kim A, Bukeyev A and Rubagotti M. An open-source 7-DOF wireless human arm motion-tracking system for use in robotics research. *Sensors*, 20(11):3082.
- 2019 Rubagotti M, **Taunyazov T**, Omarali B and Shintemirov A. Semi-autonomous robot teleoperation with obstacle avoidance via model predictive control. *IEEE Robotics and Automation Letters (RA-L)*, 4(3):2746-53.
- 2017 **Taunyazov T**, Rubagotti M and Shintemirov A. Constrained Orientation Control of a Spherical Parallel Manipulator via Online Convex Optimization. *IEEE/ASME Transactions on Mechatronics*, 23(1):252-61.

Conference Papers

- 2023 **Taunyazov T**, Lin K, Soh H. GRaCE: Optimizing Grasps to Satisfy Ranked Criteria in Complex Scenarios. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
- 2023 **Taunyazov T**, Zhang H, Eala JP, Zhao N, Soh H. Refining 6-DoF Grasps with Context-Specific Classifiers. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
- 2021 **Taunyazov T**, Song LS, Lim E, See HH, Lee D, Tee BC, Soh H. Extended Tactile Perception: Vibration Sensing through Tools and Grasped Objects. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. [**Best Paper Award**]
- 2020 Gao R, **Taunyazov T**, Lin Z, Wu Y. Supervised autoencoder joint learning on heterogeneous tactile sensory data: Improving material classification performance. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2020 **Taunyazov T**, Sng W, See HH, Lim B, Kuan J, Ansari AF, Tee BC, Soh H. Event-driven visual-tactile sensing and learning for robots. In *Robotics: Science and Systems (RSS)*.
- 2020 **Taunyazov T**, Chua Y, Gao R, Soh H, Wu Y. Fast texture classification using tactile neural coding and spiking neural network. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2019 **Taunyazov T**, Koh HF, Wu Y, Cai C, Soh H. Towards effective tactile identification of textures using a hybrid touch approach. In *International Conference on Robotics and Automation (ICRA)*.
- 2017 Omarali B, **Taunyazov T**, Bukeyev A, Shintemirov A. Real-time predictive control of an ur5 robotic arm through human upper limb motion tracking. In *Proceedings of the Companion of the 2017 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. [**Late-breaking Report**]

- 2016 **Taunyazov T**, Omarali B, Shintemirov A. A novel low-cost 4-DOF wireless human arm motion tracker. In *IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob)*.
- 2015 Omarali B, **Taunyazov T**, Nyetkaliyev A, Shintemirov A. System integration of a solar sensor and a spherical parallel manipulator for a 3-axis solar tracker platform design. In *IEEE/SICE International Symposium on System Integration (SII)*.

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