

# Tasbolat Taunyazov

National University of Singapore  
*PhD Student*

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## RESEARCH INTEREST

*Robotics*: manipulation, grasping, tactile sensing, teleoperation, control.

*Artificial Intelligence*: applied machine learning, tactile data representation learning, multi-modal fusion.

## EDUCATION

**National University of Singapore**

Aug 2018-Jan 2023 (expected)

*Ph.D. in Computer Science*

Advisors: Dr. Yan Wu and Dr. Harold Soh

Thesis: TODO

**Nazarbayev University**

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*

## AWARDS

IROS Best Paper Award 2021

NUS Research Achievement Award 2020

A-STAR SINGA PhD Scholarship 2018-2023

## PUBLICATIONS

### 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

- 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)*.

#### TEACHING EXPERIENCE

##### Teaching Assistant at Nazarbayev University

ROBT-407: Statistical Methods and Machine Learning Fall 2016

ROBT-402: Robotic/Mechatronic System Design Spring 2017

#### SERVICE

##### Conference Reviewer

IROS 2020-2022, ICRA 2020-2022, 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

**Almas Shintemirov**, Associate Professor

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