Osher Azulay

Passionate Roboticist

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Education

2020 - Present | **Ph.D., Mechanical Engineering, Tel Aviv University**
Research Area: Learning in-hand perception and manipulation with adaptive robotic hands

2018 - 2020 | **M.Sc., Mechanical Engineering, Ben Gurion University**
Outstanding students program
Thesis: Wheel loader scooping controller using deep reinforcement learning

2015 - 2019 | **B.Sc., Mechanical Engineering, Ben Gurion University**
Graduated with honors. Certificate of achievement: 2017-2018, 2018-2019

Relevant Coursework: Deep learning, Mapping and perception for autonomous navigation, Intelligent robotic systems, Intelligent automation systems, Optimal control, Robots navigation and control.

Work Experience

2020 - Present | **Graduate Student Researcher**, ROB-TAU Robotics Lab, Tel-Aviv University
- Exploring the key components for in-hand robotic manipulation including touch sensing, data-driven modeling, manipulation planning and model-based/free learning.

Summer 2023 | **Visiting Graduate Researcher**, Robot Learning Lab, Dept. of Computer Science, Rutgers University, NJ.
- Explored the application of tactile sensing for accurate object insertion and sim-to-real adaptation through the use of student-teacher architectures.

Summer 2022 | **Robotics Intern engineer**, Unlimited Robotics,
- End-to-end implementation of the ROS2 control framework for a two-handed robot, actively engaging in both simulation and hardware integration phases.

2018 - 2020 | **Student Researcher**, BGU Robotics Control Lab, Ben-Gurion University
- Design and control of custom-built wheel loader for autonomous excavation using deep RL and improving Sim2Real adaptation.

2016 - 2018 | **Research Student Assistant**, BGU Robotics Control Lab, Ben-Gurion University
- Providing technical expertise and assistance for projects over various ROS based robotic platforms, including robotic arms and mobile robots

Talks & Recognition

2022 | **Awarded the Prof. N.Levtzion Scholarships for outstanding doctoral students.**

| **Awarded the KLA Scholarships for PhD excellence.**

| **Received the Dean's Excellence in Teaching award.**

| **Invited to talk at the annual meeting for Motion Control and Automation**

Teaching Experience

Spring 2022 | **Robotics and control lab**, Designed and created course material, Mech Eng., Tel-Aviv University

Fall 2020-22 | **Intro to control theory**, Teaching Assistant, Mech Eng., Tel-Aviv University

Spring 2019 | **Intro to Electrical Engineering**, Teaching Assistant, Mech Eng., Ben-Gurion University

Fall 2019 | **C Programming**, Teaching Assistant, Mech Eng., Ben-Gurion University

Publications

2023

1. **Azulay, O.**, Mizrahi, A., Curtis, N. & Sintov, A. Augmenting Tactile Simulators with Real-like and Zero-Shot Capabilities. *Under Review* (2023).
2. **Azulay, O.** *et al.* AllSight: A Low-Cost and High-Resolution Round Tactile Sensor with Zero-Shot Learning Capability. *IEEE Robotics and Automation Letters* (2023).

2022

3. **Azulay, O.**, Ben-David, I. & Sintov, A. Learning Haptic-based Object Pose Estimation for In-hand Manipulation with Underactuated Robotic Hands. *IEEE Transactions on Haptics* (2022).
4. **Azulay, O.**, Monastirsky, M. & Sintov, A. Haptic-based and SE(3)-aware object insertion using compliant hands. *IEEE Robotics and Automation Letters* (2022).
5. Monastirsky, M., **Azulay, O.** & Sintov, A. Learning to Throw With a Handful of Samples Using Decision Transformers. *IEEE Robotics and Automation Letters* (2022).

2021

6. **Azulay, O.** & Shapiro, A. Wheel Loader Scooping Controller Using Deep Reinforcement Learning. *IEEE Access* (2021).
7. Bamani, E., **Azulay, O.**, Gurevich, A. & Sintov, A. Open-Sourcing Generative Models for Data-driven Robot Simulations. *Data-Centric AI workshop, NeurIPS2021* (2021).

Skills

Programming	Python, MATLAB, C/C++
Tools & libraries	ROS, Physics sims (Isaac, Gazebo, Mujoco), PyTorch, TensorFlow, OpenCV, Git
Engineering	Solidworks, Microcontrollers and Mechatronics