Özgür Aslan

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EDUCATION

Middle East Technical University
Master of Science (M.Sc.), Computer Engineering
Enrolled October, 2021
Expected Graduation May, 2024 CGPA: 4.0/4.0

Bachelor of Science (B.Sc.), Computer Engineering
Enrolled August, 2016
Graduated July, 2021 CGPA: 3.88/4.0 (4^{th} out of 229 students)

EXPERIENCE

Research at Romer and Kovan Lab
Research Assistant June 2021 -

- Working on Tübitak-1001 Project called "KALFA: New Methods for Assembly Scenarios with Collaborative Robots".
- Implemented a graph neural network based reinforcement learning agent for sequential assembly learning problem. Devised a function that compares the current assembly point cloud and target assembly point cloud and computes a reward for the agent.
- This work is published in IROS2022 Kyoto, and I had the chance to present the work in person. The paper link and the video link.
- Currently working on error detection and mitigation in assembly sequences using causal inference.
- Contributed to "Apprentice: advances toward the development of a cobot helper in assembly lines" chapter in "Human-Robot Collaboration: Unlocking the potential for industrial applications" book. I mainly worked on "Assembly" section. -The chapter link.
- Co-advised Romer summer interns of 2022 and 2023.
- Co-advised a 2022 computer engineering graduation project called ChessMate. The project video link.
- Prepared a website for ROMER (Center for Robotics and Artificial Intelligence). Romer website link.

Graduation Project
URHuman - Senior Year Project (Awarded 2^{nd} Place) October 2020 - June 2021

- Worked on a robotics project called "URHuman: Teleoperation of Manipulator Arm with Hand Movements", which is awarded 2^{nd} place.
- The aim of the project was controlling a Universal Robots UR5 manipulator arm using hand movements captured by an RGB camera.
- The project included working on learning-based solutions for hand tracking, velocity control, collision avoidance, and motion smoothing.
- Mainly worked on mapping of hand movement to velocity of the robot joints and motion smoothing. The project link

Master Courses' Projects
Metu Computer Engineering

- Studied and implemented "Learning Part Generation and Assembly for Structure-aware Shape Synthesis" paper for the Deep Learning course. The paper link and the github link.

- Implemented and presented "Reinforced Attention for Few-Shot Learning and Beyond" paper for the Advanced Deep Learning course. The paper link and the presentation link.
- Studied and implemented "HistoGAN: Controlling Colors of GAN-Generated and Real Images via Color Histograms" paper. The paper link and the github link.

Internships

Kovan Research Lab — June 2019 – August 2020

- Done two internships at Kovan Research Lab.
- At the first internship, studied and presented object detection algorithms such as RCNN, Fast RCNN, Faster RCNN, and YOLO. Implemented an object detection pipeline using RotationNet and tabletop segmentation of the object point clouds using the PCL library.
- At the second internship, worked on gaze detection and its applications to human robot interaction. Used "RT-GENE and RT-BENE: Real-Time Eye Gaze and Blink Estimation in Natural Environments" for gaze detection, and combined it with motion control to enable UR5 arm to point where a human is looking at.
- Also, studied causal inference and causal discovery with reinforcement learning.

PUBLICATIONS

- O. Aslan, B. Bolat, B. Bal, T. Tumer, E. Sahin and S. Kalkan, "AssembleRL: Learning to Assemble Furniture from Their Point Clouds," 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Kyoto, Japan, 2022, pp. 2748-2753, doi:10.1109/IROS47612.2022.9982112
- Y. Terzioglu, O. Aslan, B. Bolat, S. Buyukgoz, Z. S. Baltaci, S. Kalkan, and E. Sahin,: "Apprentice: advances toward the development of a cobot helper in assembly lines," in Human-Robot Collaboration: Unlocking the potential for industrial applications. IET Digital Library, 2023, pp. 203-240, doi:10.1049/PBCE134E_ch10

TECHNICAL SKILLS

- Python
- Pytorch
- Pytorch Geometric
- Open3D
- Mujoco
- Gymnasium/Gym
- Stable Baselines3
- ROS
- MoveIt
- Gazebo

LANGUAGES

- English: Fluent
- German: Beginner
- Turkish: Native