

Irem Kaftan

ikaftan@ethz.ch | ikaftan.github.io

EDUCATION

ETH Zurich

Master of Science in Electrical Engineering and Information Technology

Zurich, Switzerland

Sept 2021 – present

Bilkent University

Bachelor of Science in Electrical and Electronics Engineering, CGPA: 3.92/4.00

Ankara, Turkey

Sept 2017 – June 2021

Bilkent University

Minor in Psychology, CGPA: 3.90/4.00

Ankara, Turkey

Feb 2019 – June 2021

EXPERIENCE

Sevensense Robotics

Robotic Systems Engineer Intern

Zurich, Switzerland

July 2022 – March 2023

Junior Robotics Engineer

March 2023 – present

- Performing system tests for the quality assurance of the autonomy stack and developing software for improved test automation and easier customer integrations.

ETH AI Center

Research Assistant

Zurich, Switzerland

Jan 2022 – June 2022

- Generated custom speech using text-to-speech (TTS) algorithms with the goal of combining it with a deepfake human avatar to present a constructive message as part of an AI+Art project.

Neurotechnology Group

Semester Project

Zurich, Switzerland

Mar 2022 – July 2022

- Introduced a noninvasive and restrained free eye tracking setup and implemented a face detection algorithm that runs in real-time to study visual attention in common marmosets.

Imaging and Computational Neuroscience Laboratory

Undergraduate Researcher

Ankara, Turkey

Mar 2019 - June 2021

- Observed the active regions of the subject's brain under fMRI while the subject was listening to stories and converted 3-dimensional fMRI data to 2-dimensional flatmaps by using Freesurfer.

ASELSAN

Research and Development Intern

Ankara, Turkey

June 2020 – Aug 2020

- Implemented C code for some user interface (UI) and back-end modifications of the STKC-8250 calibration device, which is used to calibrate the STC-8250 digital tachograph.

Integrated Systems and Systems Design (ISSD)

Research and Development Intern

Ankara, Turkey

Aug 2019 – Sept 2019

- Implemented an end-to-end plate detection and plate number recognition system using the YOLOv3 algorithm and ran the system on Jetson Nano to test it with real-time video streaming.

PUBLICATIONS

- Ayça Takmaz*, Jonas Schult*, **Irem Kaftan**[†], Mertcan Akçay[†], Bastian Leibe, Robert Sumner, Francis Engelmann, and Siyu Tang (2022). “3D Segmentation of Humans in Point Cloud with Synthetic Data”. In: arXiv:2212.00786.
- **Irem Kaftan***, Özgür Bora Gevrek*, and Tolga Cukur (2021). “Synergistic Reconstruction-Synthesis of Multi-Contrast MRI using Transfer Learning Method”. In: 29th Signal Processing and Communications Applications Conference (SIU).

PROJECTS

- Learning to Segment Humans in 3D Scenes** | *Virtual Humans Course* *Feb 2022 – June 2022*
- Proposed a pipeline to augment 3D indoor datasets with synthetically generated humans and real human scans.
 - Devised a method for segmenting humans in depth scans rendered from the populated 3D scenes.
- Interactive Exploration for Mapping** | *Perception and Learning for Robotics Course* *Feb 2022 – June 2022*
- Introduced a reinforcement learning framework to encourage an agent to navigate in an unknown environment and to interact with objects to perform more complete object-level mapping.
 - Implemented a bridge between the reinforcement learning and the mapping framework to exchange information.
- Monocular Visual Odometry** | *Vision Algorithms for Mobile Robotics Course* *Dec 2021 – Jan 2022*
- Implemented a monocular visual odometry pipeline which can initialize 3D landmarks, track keypoints between frames, estimate the pose using 2D ↔ 3D correspondences, and triangulate new landmarks.
- Human-Machine Collaboration using AR** | *Mixed Reality Course* *Oct 2021 – Jan 2022*
- Developed an AR app for HoloLens 2 to align georeferenced data of a site with its real world location and edit the data to plan changes on site with the goal of combining it with an autonomous walking excavator.
- Autonomous Robot** | *Bachelor Thesis* *Sep 2020 – June 2021*
- Constructed an autonomous robot which can navigate in an unknown environment and locate a target by using the data coming from a LIDAR, a stereo camera, and an INS.
 - Implemented C++ code in ROS to perform motion planning, navigation, and exploration.

SKILLS

Programming: Python, C++, MATLAB, ROS, PyTorch

Languages: Turkish (native), English (fluent: C2/TOEFL: 117), German (intermediate: B1)

HONORS & AWARDS

Bilkent University Academic Excellence Award: Awarded to top 10 students based on graduation CGPA.

Bilkent University Full-Merit Scholarship: Awarded to top 1 % of students based on CGPA.

Bilkent University High Honor Rolls (2017 - 2021): Awarded to students with a CGPA above 3.50/4.00.