Project Portfolio – Turcan Tuna

Time	Project	Scope
2022 Oct ~ Cont.	**1.** Locally and globally consistent online implicit mapping • Fusion of power of implicit representations for local accuracy • Leveraging global consistency of GPO • Multi-modal mapping ➢ C++ ➢ Bash ➢ Git ➢ Python ➢ ROS ➢ Pytorch ➢ Bash ➢ Git	Research
2022 May. ~ 2022 Oct.	**2.** Online lightweight mesh generation framework for user guidance in space exploration • Dense volumetric mapping under unreliable communication • Triangle mesh processing pipeline for offline map generation • Point cloud colorization ➢ C++ ➢ Bash ➢ Git ➢ Python ➢ ROS	Research & Engineering
2021 Nov. ~ 2022 May.	**3.** LiDAR Localizability Aware Constrained Optimization for Robust Robot Pose Estimation, Robotics Systems Lab (RSL) ETH Zürich • LiDAR localizability detection • Design and Deployment of an augmented ICP algorithm • Comparative Evaluation • Linear Algebra ➢ C++ ➢ Bash ➢ Git ➢ Python ➢ ROS	Master's Thesis & Research
2021 Mar. ~ August	**4.** Perception Engineering Internship, ANYbotics • Design and deployment of a Global localization system. • Design and deployment of a SLAM supervision module. • Comparative Evaluation of Odometry Systems • Sensor Calibration ➢ C++ ➢ Docker ➢ Git ➢ Python ➢ ROS ➢ Bash	Internship
2020 Sept~2021 Jan.	**5.** Deep Learned Augmented Robocentric EKF for Visual Inertial Odometry • Learning Based Visual Feature Tracking • Detection of Learning Based Features with Uncertanity • Learning Based Gravity Vector Estimation with Uncertanity • Extended Kalman Filter(EKF) Augmentation ➢ C++ ➢ Pytorch ➢ Python ➢ ROS	Research
2019~2021 March.	**6.** Design and Deployment of New Generation Super Mega Bots, ETHz ASL • Lead Mechanical Designer • Rapid Prototyping and Product Design ➢ Solidworks ➢ Microsoft Office ➢ Siemens NX	Research Assistant
2020 Feb. ~July.	**7.** ARbotics: Soft Real-Time Interactive Simulation and Visualization Framework in AR for Robotic Systems Based on ROS • Sensor Simulation for AR systems	Course Project

- Fundamentals of Visual System
- Inter-Platform connections
  - C#
  - Microsoft Hololens
  - Unity 3D
  - Docker

2020 Feb. ~July. **8.** DEEL VIO: Deep End-to-end Learning Visual Inertial Odometry — Course Project

- End-to-end training of RNN and CNNs
- Deep Neural Network Design
- Sensor Fusion, Monocular Camera & IMU
  - Python
  - Tensorflow / Keras

2019 **9.** Deep Learning Framework for Learning Prediction and Simulation Focused Models — BSc Thesis, Publication

- Non-Linear System Identification
- Simulation of Non-Linear Systems
- Deep Neural Network Design
- Recurrent Neural Networks, DNNs
- One Step Ahead Prediction of Time Series
  - MATLAB
  - C

2018 **10.** Emotion Recognition using Temporal Segment Networks with Batch Normalized Inception architecture — Research Assistant

- Human Emotion Classification
- Convolutional Neural Networks
- Statistical Data Feature Extraction
  - MATLAB
  - Pytorch