Furkan Mert Algan

Contact Information

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Research Interests

Machine Learning: Deep Learning, Convolutional Neural Networks, Transformers
Computer Vision: 3D Vision, Scene Understanding, Motion Estimation, Diffusion Models
Computer Graphics: 3D Reconstruction, Neural Rendering

Education

Technical University of Munich, Munich, Germany — 2021–2026 (expected)

Ph.D.in Chair of Media Technology
Advisor: Prof. Steinbach Eckehard

Technical University of Munich, Munich, Germany — 2017–2021

M.Sc.in Informatics
Thesis: *3D Motion Estimation on Point Clouds using Deep Learning*

Sabanci University, Istanbul, Turkey. — 2013–2017

B.Sc.in Computer Science and Engineering
Minor in Mathematics
Graduation Project: *Sensitivity Time Control Function on Marine Radar Videos*

Research Experience

Technical University of Munich, Munich, Germany
Research Associate in the Chair of Media Technology — Dec 2021 - Present

- Currently in 6G Digital Twin project.
- Working for the realization of a continuously updated digital twin for objects, spatial geometry, surface properties, sensors, actuators and network.
- Research focusing on 3D model editing, generation and completion
- Working closely with Chair of Communication Networks to create a real-time application.
  Supervisor: Eckehard Steinbach

Harvard University, Cambridge, MA, USA
Graduate Research Fellow in the Visual Computing Group — Aug 2020 - June 2021

- Master's thesis about 3D motion estimation on point clouds using deep learning.
- Achieved state-of-the-art results using sparse convolutions and transformers.
- Paper submission is expected.
  Supervisors: Prof. Hanspeter Pfister, Prof. Donglai Wei, Prof. Matthias Niessner

Technical University of Munich, Munich, Germany
Graduate Research Intern in the Visual Computing Lab — Sept 2019 - June 2020

- Combined Scan2CAD and VoxelHashing research projects
- Implemented a real-time 3D reconstruction framework that replaces incomplete model by a CAD model in a 3D scene
  Supervisor: Prof. Matthias Niessner

Research Intern in the Chair of Robotics, AI and Real-time Systems — Aug 2016 - Oct 2016

- Contributed to a task-driven algorithm for configuration synthesis of the modular robot project.
- Gathered sample data in MATLAB and created data structures in C++
  Supervisor: Prof. Matthias Althoff

Professional Experience

Roboy, Munich, Germany
Practical Project Student — May 2019 - Sept 2019

- Worked in a multidisciplinary team to build ice cream selling Roboy
- Contributed to Ravestate, a reactive library for real-time natural language dialog systems and created ice cream selling dialogue.
- Implemented a Telegrambot to call Roboy to a remote location.

HAVELSAN, Istanbul, Turkey
Graduation Project Student — Nov 2016 - June 2017

- Implemented the Sensitivity Time Control Function on Marine Radar Videos on FPGA.
- Gathered sea clutter data using K-distribution in MATLAB.

Technical Skills

Programming Languages: C++, Python

Deep Learning: PyTorch, Scikit-learn

Miscellaneous: Git, OpenGL, CUDA, ROS, Blender

Editing Softwares: Adobe Premiere, Adobe Photoshop.

Notable Projects

Augmentation for Scene Flow Estimation
This project aims to create a new augmentation technique for scene flow estimation using differentiable rendering.

A KinectFusion Reimplementation on CUDA
This project aims to implement a system for accurate real-time mapping of complex and arbitrary indoor scenes in variable lighting conditions, using only a low cost Kinect camera. A coarse-to-fine iterative closest point (ICP) algorithm has been implemented for point cloud registration using CUDA library in C++.

Exploring the Relationship between Design Metrics and Software Diagnosability using Machine Learning
The purpose of the project was to find best software metrics for fault localization using machine learning methods. A dataset has been created using Eclipse Plugin CodePro and it has been analyzed using Scikit-Learn library in Python.

Teaching Experience

Technical University of Munich
Teaching Assistant

- Software Engineering Lab — Winter 2023, Summer 2024, Winter 2024
- Techniques in Artificial Intelligence — Winter 2018

Sabanci University
Undergraduate Teaching Assistant

- Introduction to Programming — Spring 2017
- Calculus — Spring 2015, Fall 2015, Fall 2016

Honors and Awards

TEV-DAAD Master's Scholarship

Awarded by Turkish Education Foundation and German Academic Exchange service due to success in undergraduate studies

Sabanci University Merit Scholarship

Awarded by Sabanci University due to success in national university entrance exam.

Languages

Turkish (native), English (fluent), German (limited).

Selected Publications

1. **F Mert Algan** *et al.*, "LEMON: Localized Editing with Mesh Optimization and Neural Shaders " *arXiv preprint*, arXiv:2409.12024, 2024. [Online]. Available: https://arxiv.org/abs/2409.12024 Website

References

Available upon request.