# 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

**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.