# HALIL ÇAĞRI BILGI

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Github | Homepage | Linkedin

## SUMMARY

Researcher in artificial intelligence with MSc in computer science. Main research area is computer vision, specifically multiple object tracking also passionate about machine learning for graph structured data, knowledge representation and generative models. With a combined 2+ years of research and engineering experience in both academic and industry settings.

Coding skills with Python and DL frameworks such as PyTorch and TensorFlow, experience with git and issue tracking systems.

**Languages**: Turkish (native), English (fluent, 8.0/9 IELTS), German (A2)

**CliftonStrengths:** Learner | Input | Intellection | Adaptability | Consistency

## EDUCATION

MSc, Electrical and Electronics Engineering. (High Honor Student)
**Middle East Technical University (METU) - Ankara, Turkey** **Sep 2021 - Current**

- Specialization on signal processing and computer vision with courseworks on linear algebra, stochastic signal processing, pattern recognition, machine vision, deep learning, advanced deep learning and deep generative models.
- Thesis study on exploitation of graph neural networks for the multiple object tracking. Aiming to increase the robustness of tracking on occlusions and failure cases, by formulating the problem as a link prediction in a graph domain by iteratively merging shorter tracklets to longer ones under the supervision of Prof. Aydın Alatan.

BSc, Electrical and Electronics Engineering. (Honor Student)
**Middle East Technical University (METU) - Ankara, Turkey** **Feb 2017 - July 2021**

- Senior year specialization on Signal Processing and Machine Learning.
- Graduation project: Indoor position tracking system and an audio guide for museums. I implemented a web app for real-time monitoring and registration and also implemented a communication network for the devices within the same LAN, enhancing connectivity and data exchange between IoT devices and the main app.

## WORK EXPERIENCE

Research Assistant
**Middle East Technical University (METU) - Ankara, Turkey** **Nov 2022 - Current**

- Teaching assistant in courses *Digital Signal Processing*, *Digital Electronics Laboratory*.

Research Engineer
**METU Center for Image Analysis - Ankara, Turkey** **Sep 2021 - Oct 2023**

- Developed a graph-based deep learning method for merging tracklets of a target with fragmented trajectories in Multi Object tracking setting. Also re-implemented or adapted the state-of-the-art methods to a given problem. Also conducted experiments utilizing Optimal Transport theory on merging tracklets.
- Participated in an international project funded by Telespazio to estimate the positions and orbits of space objects utilizing images. Designed and implemented a comprehensive pipeline encompassing orbit determination, propagation, and refinement techniques.

Software Engineer
**MILSOFT - Ankara, Turkey** **Apr 2021 - July 2021**

- Developed object detection algorithms tailored to SAR (Synthetic Aperture Radar) imagery, utilizing OpenCV and PyTorch. Successfully adapted and implemented existing methods from the literature to address specific challenges in the SAR domain

## SKILLS

**Theoretical Skills:** Deep Learning, Machine Learning, GANs, VAEs, Language Models, Attention, GNNs, Transformers, Statistics

**Software and Tools:** Python, PyTorch, TensorFlow, Docker, Torch-Geometric, C++, Matlab, JavaScript, Node.js, SQL, Git

## REFERENCES

- Prof. Aydın Alatan | alatan@metu.edu.tr | METU EE
- Prof. Sinan Kalkan | skalkan@metu.edu.tr | METU CENG