

Melih Darcan

VIRTUAL HUMANS · 3D/4D COMPUTER VISION RESEARCHER

Ankara, Turkey

✉ melih.darcan@tutaimail.com

🏠 melihdarcan.dev

📁 MelihDarcanxyz

🌐 melih-darcan

🎓 Melih Darcan

Education

HU (Hacettepe University) · GPA: 3.17 · Minimum GPA: 2.0 · Maximum GPA: 4.0

Ankara, Turkey

B.S. IN ARTIFICIAL INTELLIGENCE ENGINEERING

Sep. 2020 - Feb. 2025

Object Oriented Programming | Machine Learning | Deep Learning | Image Processing | Computer Vision | Bioinformatics

Work Experience

Hacettepe University Biological Data Science Laboratory

Ankara, Turkey

SOFTWARE ENGINEER

Jul. 2022 - Present

- Developed, maintained and refactored **pypath**, utilizing python, GraphQL, and REST API by adding multiple dataset modules to assist bioinformatics researchers and reduce the time spent on data preprocessing.
- Developed a GraphQL API to give easier access to our Knowledge Graph Database, CROssBAR.
- Worked on LLM integration of the CROssBAR
- Built the server infrastructure of CROssBAR

Publications

- | | | |
|------|---|-----|
| 2025 | Current Opinion in Structural Biology , Unlu, A*, Ulusoy, E*, Yigit, M. G*, Darcan, M* , Dogan, T., Protein Language Models for Predicting Drug-Target Interactions: Novel Approaches, Emerging Methods, and Future Directions, Sequences and Topology (2025), Elsevier | URL |
| 2024 | ECCB 2024 Poster , Sen, B., Ulusoy, E., Darcan, M. , Ergun M., Dogan, T., (2024) CROssBARv2: A Unified Biomedical Knowledge Graph for Heterogeneous Data Representation and LLM-Driven Exploration | URL |

Posters

- | | | |
|------|---|------------------|
| 2024 | HIBIT 2024 , Sen, B., Ulusoy, E., Darcan, M. , Ergun, M., Dogan, T. (2024) CROssBARv2: A Unified Biomedical Knowledge Graph for Heterogeneous Data Representation and LLM-Driven Exploration. 17th International Symposium on Health Informatics and Bioinformatics, 20 December 2024, Istanbul, Turkey | Istanbul, Turkey |
|------|---|------------------|

Conferences

- | | | |
|------|--|------------------|
| 2024 | International Symposium on Health Informatics and Bioinformatics , poster presented | Istanbul, Turkey |
| 2024 | BAYOYO 2024 (Science Academy Artificial Learning Summer School) , attended | Ankara, Turkey |
| 2023 | International Symposium on Health Informatics and Bioinformatics , attended | Ankara, Turkey |
| 2022 | International Symposium on Health Informatics and Bioinformatics , attended | Mersin, Turkey |

Extracurricular Activity

inzva

Online

APPLIED AI

Apr. 2025

- Gave a presentation about Video Understanding & Virtual Humans to Applied AI program participants.

Samsung & United Nations

Online

SAMSUNG INNOVATION CAMPUS - AI

Jan. 2025

- Gave a presentation about model deployment to Samsung Innovation Campus program participants.

inzva

Online

DEEP LEARNING STUDY GROUP

Oct. 2024

- Gave a presentation about CNNs to Deep Learning Study Group program participants.

Samsung & United Nations

Online

SAMSUNG INNOVATION CAMPUS - AI

Jun. 2024

- Gave a presentation about model deployment to Samsung Innovation Campus program participants.

inzva

Istanbul, Turkey

INZVA AI PROJECTS #8

Feb. 2024 - May. 2024

- Improved DeTraffic to help sustainable development goals number 11, 12, 13, and 3.
- Implemented Q Networks with KANs on traffic light control, which was a novel contribution.
- Got more stable and efficient results in our experiments.

Samsung & United Nations

SAMSUNG INNOVATION CAMPUS - AI

Ankara, Turkey
Aug. 2023 - Dec. 2023

- Got training about AI, sustainable development goals and AI development lifecycle.
- Built DeTraffic to help sustainable development goals number 11, 12, 13, and 3.

inzva

GOOGLE DEVELOPERS ML BOOTCAMP

Online
Aug. 2023 - Dec. 2023

- Got training about AI and Tensorflow. Especially deepened our methodology on AI projects.
- Trained specifically for Tensorflow Developer exam, and joined to kaggle challenges.

Skills

AI	Virtual Humans, Computer Vision, Deep Learning, Machine Learning, Reinforcement Learning, OpenCV, Pytorch
Programming Languages	Python, C, Java
Other	Linux System Admin, Bash, AstroJS
Languages	Turkish (Native), English (C1), Dutch (A0-A1)
Fun	Zeybek (Aegean folk dance), folk dance, archery, throat-singing, komus (jaw harp)

Projects

Here are, **a selection** of my projects. Thanks to the university courses, I implemented various models / methods from scratch.

Procrustes Alignment

Portfolio Project

POINT CLOUD REGISTRATION · RIGID DEFORMATION

source

- Implemented procrustes alignment to align point clouds, given correspondences, calculating the rigid deformation. Utilized Singular Value Decomposition (SVD) to efficiently compute the optimal transformation matrix within the process.

Iterative Closest Points

Portfolio Project

POINT CLOUD REGISTRATION · NON-RIGID DEFORMATION

source

- Implemented iterative closest points to align point clouds, without any given correspondences, calculating the non-rigid deformation. Utilized Chamfer Distance to efficiently compute correspondences & losses every iteration.

AI Choreo Test Case

Google Summer of Code

MOTION-TEXT GENERATION · CONTRASTIVE LEARNING · SEMI-SUPERVISED LEARNING

source

- Inspired by GIT-Mol, developed a semi-supervised contrastive learning pipeline for motion-text generation with point-cloud motion data.

panostitch

AIN433 - Computer Vision Lab.

COMPUTER VISION · HOMOGRAPHY · RANSAC

- Employed SURF to extract descriptors and identify corresponding features across multiple images
- Filtered initial matches using RANSAC to eliminate outliers and accurately estimate homography matrices.
- Generated a seamless panorama image by applying inverse warping based on the calculated homography transformations.

pyrablend

AIN432 - Image Processing Lab.

IMAGE PROCESSING · BLENDING · IMAGE PYRAMIDS

- Utilized image pyramid representations to blend images at multiple resolutions, effectively minimizing artifacts and creating natural-looking composites.

DeTraffic

Samsung Innovation Campus |
inzva AI Projects #8

TRAFFIC FLOW MANAGEMENT · (MULTI-AGENT) REINFORCEMENT LEARNING

source

- Leveraged Deep Q-Networks (DQN) with KAN layers to optimize traffic flow.
- The model demonstrates potential to decrease travel time, fuel consumption, and mitigate air/noise pollution – contributing to climate change mitigation efforts.
- Achieved more stable results compared to traditional DQN while utilizing fewer parameters.

Honors & Awards

2020 **Government**, Bursary to finance undergraduate degree

References

Prof. Dr. Tunca DOĞAN

HACETTEPE UNIVERSITY AI ENGINEERING

- He is our supervisor at HU Biological Data Science Lab.
- You can learn more about him from **here**