Adil Kaan Akan

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Education

Koc University **Istanbul, TR**
Ph.D. in Computer Science, GPA: 3.96 2022–Expected Sep 2025
Advisor: Yucel Yemez
Research Focus: Object-centric learning, Generative models, Image synthesis
– Published at **ICLR 2025** on slot-guided adaptation of pre-trained diffusion models
– Extended this work to video; currently under review at **IEEE TPAMI**

Koc University **Istanbul, TR**
M.Sc. in Computer Science, GPA: 3.96 2020–2022
Advisor: Fatma Guney
Academic Excellence Award recipient
Research Focus: Stochastic video prediction, Future instance segmentation, Trajectory prediction
– Published two papers at **ICCV** on video prediction and trajectory forecasting
– Published at **ECCV** on future instance segmentation for autonomous driving
– Published two preprints on video prediction and trajectory forecasting
Thesis: Stochastic Future Prediction in Real World Driving Scenarios

Middle East Technical University **Ankara, TR**
B.Sc. in Computer Engineering, GPA: 3.83 (Ranked $5^{th}/249$) 2015–2020
Research Focus: Adversarial image generation
– Published a journal paper at **SIVP** on minimal perturbation adversarial image generation
– Published at **ICIP** on adversarial image generation

Experience

Codeway Digital **Istanbul, TR**
AI Research Scientist Jan 2023–Present
– Taking a leading role in research on large-scale generative models for **Retake AI**, a personalized face and photo editor powered by diffusion models
– Developed and refined image-based generative pipelines using models like Stable Diffusion, improving visual realism and system efficiency
– Took primary responsibility for the research and design of Codeway's first proprietary in-house generative model, including adapting a base diffusion model into a scalable personalization engine, designing the training and fine-tuning strategy, and collaborating with engineering teams to integrate it into the production pipeline
– Designed and implemented a lightweight compression pipeline for personalized models, reducing storage usage by over 95% without quality loss, and cutting infrastructure costs by more than 95%

Kuartis Technology and Consulting **Ankara, TR**
Computer Vision Engineer Feb 2020–Aug 2020
– Focused on real-time object detection for self-driving cars
– Deployed real-time object detectors and trackers on NVIDIA Drive AGX platform

ImageLab, METU **Ankara, TR**
Undergraduate Researcher Jun 2018–Aug 2020
– Brain decoding with fMRI data using machine and deep learning
– Visualization of object detectors and their receptive fields
– Adversarial image generation

Computer Vision Lab, ETH Zürich **Zurich, CH**
Research Intern at Computer-assisted Applications in Medicine group (CAiM) Jun 2019–Sep 2019
– Worked on development of a Biomedical Data Analysis tool
– Analyzed high dimensional biomedical data with image processing techniques
– Designed a UI where users can use computer vision techniques without any prior knowledge

Publications

A. K. Akan, Y. Yemez, "Compositional Video Synthesis by Temporal Object-Centric Learning", Arxiv preprint, arXiv:2507.20855, 2025 (Submitted to IEEE TPAMI).

A. K. Akan, Y. Yemez, "Slot-Guided Adaptation of Pre-trained Diffusion Models for Object-Centric Learning and Compositional Generation", International Conference on Learning Representations, 2025.

Gorkay Aydemir, **A. K. Akan**, F. Guney, "ADAPT: Efficient Multi-Agent Trajectory Prediction with Adaptation", Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2023.

Gorkay Aydemir, **A. K. Akan**, F. Guney, "Trajectory Forecasting on Temporal Graphs", Arxiv preprint, arXiv:2203.00255, 2022.

A. K. Akan, F. Guney, "StretchBEV: Stretching Future Instance Prediction Spatially and Temporally", In European Conference on Computer Vision (ECCV), 2022.

A. K. Akan, S. Safadoust, E. Erdem, A. Erdem, F. Guney, "Stochastic Video Prediction with Structure and Motion", Arxiv preprint, arXiv:2203.10528, 2022.

A. K. Akan, E. Erdem, A. Erdem, F. Guney, "SLAMP: Stochastic Latent Appearance and Motion Prediction", Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2021.

A. K. Akan, E. Akbas, F. T. Y. Vural, "Just Noticeable Difference for Machine Perception and Generation of Regularized Adversarial Images with Minimal Perturbation", Signal, Image and Video Processing (SIVP), 2021.

A. K. Akan, M. A. Genc, F. T. Y. Vural, "Just Noticeable Difference for Machines to Generate Adversarial Images", IEEE International Conference on Image Processing (ICIP), 2020.

A. K. Akan, B. B. Kivilcim, E. Akbas, S. D. Newman, F. T. Y. Vural, "Modeling and Decoding Complex Problem Solving Process by Artificial Neural Networks" in IEEE Signal Processing and Communications Applications Conference (SIU), 2019.

Research Interests

- Object-centric Learning
- Generative models
- Stochastic future prediction
- Future instance segmentation
- Motion forecasting for autonomous driving

Teaching

- **Teaching Assistant** at Koc University
  - COMP100 - Introduction to Computer Science
  - COMP302 - Software Engineering
  - COMP491 - Computer Engineering Design
- **Student Teaching Assistant** at Middle East Technical University
  - CENG230 - Introduction to C Programming
  - CENG223 - Discrete Computational Structures

Skills

Languages: Python, C/C++, Julia
Libraries and Frameworks: PyTorch, Hugginface, Diffusers, Tensorflow/Keras, Scikit-Learn
Tools: Matlab, ImageJ, HDF5, LaTeX