Alper Kayabaşı

E-mail • GitHub • Web page

Current Research Interests

Video problems pose unique challenges compared to static images—most notably strict temporal coherence requirements and severe data scarcity driven by the curse of dimensionality. My research addresses these bottlenecks by focusing on inverse problems in video restoration and video depth estimation.

Education

2023 – now **University of California Riverside** – Riverside, USA
Ph.D. in Electrical Engineering
GPA: 4.00.
Advisor: Asst. Prof. Vishwanath Saragadam

2020 – 2023 **Middle East Technical University** – Ankara, Turkey
M.S. in Electrical and Electronical Engineering
Thesis: Few-shot Segmentation by Enhanced Ensemble of Base and Meta Predictions
GPA: 3.79.
Advisor: Prof. Dr. İlkay Ulusoy

2015 – 2020 **Hacettepe University** – Ankara, Turkey
B.S. in Electrical and Electronical Engineering
Capstone Project: Laser Range Finder with Image Tracking
GPA: 3.64 - ranked 1st.
Advisor: Prof. Dr. Feza Arıkan

Publications

Arxiv **Event-assisted Contrast Improvement for Robust Object Detection via Deblurring**

CVPR 2026 **The Surprising Effectiveness of Noise Pretraining for Implicit Neural Representations**
Kushal Vyas, Alper Kayabasi, Daniel Kim, Vishwanath Saragadam, Ashok Veeraraghavan, Guha Balakrishnan

CVPR 2025 **Bias for Action: Video Implicit Neural Representations with Bias Modulation**
Alper Kayabasi, Anil Kumar Vadathya, Guha Balakrishnan, Vishwanath Saragadam

SIU 2023 **Detecting Improper Driving via Frozen CLIP**
Hamza Etcibasi, Alper Kayabasi, Gulin Tüfekci

WACV 2023 **Elimination of Non-Novel Segments at Multi-Scale for Few-Shot Segmentation**
Alper Kayabaşı, Gülin Tüfekci, İlkay Ulusoy.

ECCV W, 2022 **Detecting Driver Drowsiness as an Anomaly Using LSTM Autoencoders**
Gülin Tüfekci*, Alper Kayabaşı*, Erdem Akagündüz, İlkay Ulusoy.
(*Equal Contribution)
European Conference on Computer Vision - In-Vehicle Sensing and Monitorization Workshop.

SIU, 2022 **A Comparative Analysis of Revealing Temporal Patterns for Driver Drowsiness Detection**
Gülin Tüfekci, Alper Kayabasi, İlkay Ulusoy.
Signal Processing and Communications Applications Conference.

SPIE, 2021 **Comparison of distance metric learning methods against label noise for fine-grained recognition**
Alper Kayabasi, Kaan Karaman, İbrahim Batuhan Akkaya.
Society of Photo-Optical Instrumentation Engineers- Automatic Target Recognition XXXI Conference.

Academic Services

2025 Reveiwer for CVPR, ICCV, Transaction on Computational Imaging, ICIP

2026 Reveiwer for CVPR, ECCV, BMVC

Honors

2023 Deans Distinguished Fellowship Award. University of California, Riverside

2023 SIU 2023 Conference, Alper Atalay Best Student Paper Award

2020 Ranked 3rd in capstone projects amongst Department of Electrical and Electronical Engineering at Hacettepe University.

2020 Ranked 1st among 132 undergraduate students of Electrical and Electronical Engineering.

Selected Projects

Moving in the Right Direction: A Regularization for Deep Metric Learning (CENG 501 METU, Deep Learning, Spring 2021)
I implemented the 'Moving in the Right Direction: A Regularization for Deep Metric Learning' paper published at CVPR 2020, even though no published code was available. GitHub Repository

Scale-Aware Graph Neural Network for Few-Shot Semantic Segmentation (MMI 711 METU, Sequence Models in Multimedia, Fall 2021)
I implemented the "Scale-Aware Graph Neural Network for Few-Shot Semantic Segmentation" paper, which did not have any published code, and was published at CVPR 2021. GitHub Repository

Sea Urchin Robot (EE587 METU, Introduction to Robotics, Fall 2021)
Sea-Urchin robot design including derivation of kinematics, inverse kinematics, dynamic, and trajectory with gait planing. GitHub Repository and Video

Technical skills

Programming languages and Libraries
Proficient in: Python, PyTorch, NumPy, MATLAB, OpenCV

Languages
English (IELTS Overall Band Score: 7.0)

Research experience

2025 **Omnivision, Summer Research Internship** - Santa Clara

• Analyzed how event-based deblurring improves object detection under varying illumination and non-uniform motion blur, and proposed a learning-free method to boost detection performance by enhancing feature contrast in blurred images. This work has been submitted to a top-tier computer vision conference and is currently under review.

• I demonstrate the superiority of event-based deblurring for speed measurement of very fast rotating objects (up to 6000 rpm) compared to a standard RGB camera. My algorithm uses a fine-tuned short-time Fourier transform to identify the sweet spot in the time–frequency trade-off. I also provide accompanying code and a demo, and this work was presented by my manager at the conference.

ASELSAN Research Center

2019 – 2023 Research Engineer

• Developed an autofocus algorithm for microscopy imaging by evaluating various image sharpness metrics, selecting a robust unimodal peak indicator, and implementing an efficient search strategy to rapidly achieve optimal focus. This algorithm was integrated into a prototype capable of detecting COVID-19.

• Investigated the robustness of metric learning methods under label noise, identifying triplet-based approaches as the most sensitive and angular-based methods as the most robust. The study also provided key performance insights in the context of pseudo-labeling. These findings were published at the SPIE 2021 Automatic Target Recognition Conference.

• Trained multiple video action recognition models, including I3D, ResNet with LSTM Autoencoder, and FrozenCLIP, for driver drowsiness and distraction detection. Developed a modular testing framework and contributed to a prototype optimized for inference speed. This work resulted in a publication at the ECCV 2022 In-Vehicle Sensing and Monitoring Workshop, as well as two papers presented at domestic conferences. One of these papers, co-authored with a student intern under my guidance, received the Best Student Paper Award.

Industry experience

2019 **ASELSAN, Summer Internship** – Ankara, Turkey
Design and test of raised cosine type finite impulse response filter in VHDL language.

Attended events

2025 Computer Vision and Pattern Recognition Conferrence

2023 Winter Conference on Applications of Computer Vision (In-person)

2022 European Conference on Computer Vision (In-person)

2021 International Conference on Computer Vision (Virtual)

2021 Computer Vision and Pattern Recognition Conference (Virtual)

References

Asst. Prof. Vishwanath Saragadam, PhD Advisor
University of California Riverside

Prof. Ilkay Ulusoy, MS Advisor
Middle East Technical University

Dr. Ibrahim Batuhan Akkaya, Previous Colleague
Snap Inc.