Alper Canberk

alpercanberk.github.io

323-449-4119 alper.tu.canberk@gmail.com github.com/alpercanberk Google Scholar

Education

Columbia University **August 2021 - May 2025**

B.S. in Computer Science, GPA:4.0, Magna Cum Laude *New York, NY*

- Dean's List, all semesters
- **Highlighted Coursework**: Probabilistic Machine Learning and Graphical Models, High Performance Machine Learning, Operating Systems, Topics in Robot Learning, Stochastic Processes, Computer Graphics, Computational Complexity, Modern Analysis

Publications

AV-Link: Temporally-Aligned Diffusion Features for Cross-modal Audio-Video Generation **October 2025**

Moayed Haji-Ali, Willi Menapace, Aliaksandr Siarohin, Ivan Skorokhodov, ***Alper Canberk****, Kwot Sin Lee, Vicente Ordonez, Sergey Tulyakov*

International Conference on Computer Vision (ICCV) 2025, Patent Pending, Project Page

Differentiable Robot Rendering **May 2024**

Alper Canberk*, Ruoshi Liu, Shuran Song, Carl Vondrick*

Conference on Robot Learning (CoRL) 2024, Oral Presentation (Top 5%), Project Page

EraseDraw: Learning to Insert Objects by Erasing Them From Images **March 2024**

Alper Canberk*, Maksym Bondarenko, Ege Ozguroglu, Ruoshi Liu, Carl Vondrick*

European Conference on Computer Vision (ECCV) 2024, CVPR 2024 AI4CC Workshop Best Paper Finalist, Project Page

Cloth Funnels: Canonicalized-Alignment for Multi-Purpose Garment Manipulation **May 2023**

Alper Canberk*, Cheng Chi, Huy Ha, Benjamin Burchfiel, Eric Cousineau, Siyuan Feng, Shuran Song*

International Conference on Robotics and Automation (ICRA) 2023, Project Page

Learning Human Objectives from Sequences of Physical Corrections **May 2021**

Mengxi Li, ***Alper Canberk****, Dylan P. Losey, Dorsa Sadigh*

International Conference on Robotics and Automation (ICRA) 2021, Paper Page

Industry Experience

Sunday Robotics **June 2025 - Now**

Founding Machine Learning Engineer *Mountain View, CA*

- Led the development of ACT-1, Sunday's robotic AI foundation model that achieved state-of-the-art performance in dexterous long-horizon whole-body manipulation and generalization. Project Page
- Researched Sunday's model training strategy by iterating on parameter and data scaling, architecture, multimodal input/output shaping, and generative modeling objectives for imitation learning.
- Built training infrastructure scaling to 100s of GPUs; engineered systems for efficient video decoding, model profiling and optimization, automated experiment tracking, visualization, and high-throughput data filtering.
- Orchestrated data operations to curate human demonstration data for table bussing, dishwashing, laundry folding, and espresso-machine operation.

Snapchat, Creative Vision Research Team **May 2024 - September 2024**

Research Scientist Intern *Los Angeles, CA*

- Trained 7B+ parameter latent video diffusion transformers on petabyte-scale data, handling multi-node model sharding (DP, TP, CP), performance profiling, and inference-time tricks (forms of guidance and model merging) for increasing video generation fidelity.
- Conducted research on arbitrary pixel-space input-output modality video generation models, and joint audio-visual generation.

Snapchat, User Modeling and Personalization Research Team **June 2023 - September 2023**

Research Engineer Intern *Los Angeles, CA*

- Integrated internet-scale pretrained signals (LLM completions, CLIP embeddings) into ad recommendation systems, yielding significant gains in production.

Research Experience

Columbia Computer Vision Lab **September 2023 - September 2024**
Undergraduate Researcher *New York, NY*

- Published first-author papers at CoRL 2024 (on 4D Gaussians, robotics, and optimization) and ECCV 2024 (on generative image models, data curation, and test-time compute)

Columbia Artificial Intelligence and Robotics Lab (CAIR) **November 2021 - May 2023**
Undergraduate Researcher *New York, NY*

- First-authored an ICRA 2023 paper on robotic laundry folding in collaboration with Toyota Research Institute
- Built a scalable on-policy RL learning framework using Ray, Hydra, W&B, and PyTorch Lightning, enabling parallel cloth simulations, policy rollouts, and model training across multiple GPUs; operated UR5 hardware for sim-to-real experiments.

Stanford Intelligent and Interactive Autonomous Systems Group (ILIAD) **June 2020 – November 2020**
Research Internship *Stanford, CA*

- Co-authored an ICRA 2021 paper on human-robot interaction; evaluated human-preference guided robot trajectory optimization trade-offs between Monte-Carlo methods and Mixed Integer Programming (Gurobi, GEKKO).
- Developed an interactive 3D WebGL simulation in Unity to conduct large-scale remote user studies.

Teaching Experience

Columbia University, Computer Science Department **Fall 2023 - Spring 2024**
Teaching Assistant *New York, NY*

- TA for CS4771 Machine Learning (Graduate Level, Spring 2024) and CS4231 Analysis of Algorithms (Fall 2023, Spring 2024).
- Held 36 weekly office hours, graded 18 homework assignments, and organized 3 exam review sessions in total.

Technical Skills

Python, PyTorch, Mujoco, C, CUDA, NumPy, Matplotlib, SQL, Flask, HTML, CSS, JavaScript, LaTeX, Bash Scripting, Git

Service

Technical Reviewer for ICRA (2023, 2026), RA-L (2026), Student Volunteer for RSS (2022)

Honors and Awards

NYU Qiskit Quantum Computing Hackathon 2021 - Overall Best Project **Feb 2021**

- Developed a quantum computing based strategy based real-time online game "Circuit Showdown"

DivHacks 2021 - Overall Best Project **Oct 2021**

- A dining-hall crowdedness prediction system that scrapes Columbia dining hall WiFi statistics and estimates dining hall crowdedness using LSTM time series prediction Webpage

Bonomi Summer Scholars, Columbia University **Summer 2022**

- Awarded full-stipend summer research fellowship at Columbia SEAS.

DevFest 2024 - Best AI Project **Feb 2023**

- GPT-3 terminal helper with similarity-search based long term memory Webpage