

Cem Gokmen

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Stanford, CA 94305

Education

Stanford University, Stanford, CA

Sep. 2020 - Present

M.Sc. in Computer Science

GPA: 4.05

- **Depth:** Artificial Intelligence
- **Select Coursework:** Deep Learning (A) • Principles of Robot Autonomy I (A) • Decision Making Under Uncertainty (A) • Interactive & Embodied Learning (A) • Incentives in Computer Science (Credit) • Convolutional Neural Networks for Visual Recognition (A)

Georgia Institute of Technology, Atlanta, GA

Aug. 2016 - Dec. 2018

B.Sc. in Computer Science with Undergraduate Research Option Certification

GPA: 3.83

- **Threads:** Theoretical Computer Science & Artificial Intelligence
- **Select Coursework & Grades:** Honors Discrete Mathematics (A) • Honors Algorithms (A) • Advanced Algorithms (A) • Automata & Complexity (A) • Artificial Intelligence (A) • Machine Learning (A) • Computer Vision (A) • Game AI (A) • Advanced Linear Algebra (A)

Work Experience

Software Engineer, Google

YouTube Premium Team, San Bruno, CA

Feb. 2019 - Sep. 2020

- Worked on increasing the value of YouTube's paid subscription membership (Premium) by developing new benefits and new strategies to help users make the most of their membership.
- Developed features across YouTube's Python/C++ backends and Android/iOS/Web frontends.
- Primary contributor to free channel memberships for Premium users, which involved three teams in San Francisco and Zurich over 3 quarters. Implemented a variety of critical user journeys and participated in design process, providing domain expertise on in-app messaging methods.
- Code & design contributor to homepage hero promo placements, where personalized Premium benefits are presented in-feed, leading to significantly higher Originals & Music interactions.

Research

Interactive & Embodied Learning

Stanford Vision & Learning Lab [Homepage]

Jan. 2021 - Present

- Working with Prof. Fei-Fei Li on iGibson [Homepage] & BEHAVIOR, a simulation environment and a benchmark of common household tasks for training and evaluating embodied learning models, both submitted for CoRL 2021.
- Current research goals include the investigation and application of state-of-the-art computer vision and reinforcement learning models for establishing meaningful baselines on difficult household robotics tasks such as cooking, cleaning, and interactive navigation.

Stochastic Algorithms for Self-Organizing Particle Systems

Georgia Tech College of Computing

Aug. 2017 - Dec. 2018

- Worked on designing algorithms for biomimicry-based swarm intelligence using Markov chain Monte Carlo methods, advised by Prof. Dana Randall. I designed local, stochastic algorithms that can produce global emergent phenomena such as alignment/flocking, separation, and foraging; with rigorous guarantees of convergence and compatibility with fully distributed agents.
- Our work on a separation algorithm was presented as a Brief Announcement at ACM PODC 2018 and as a full paper at RANDOM 2019. I received the Best Poster Award at GT's Undergraduate Research Symposium for this algorithm.

Airborne Measurements of Atmospheric Electricity

Georgia Tech School of Electrical and Computer Engineering

Jan. 2017 - Dec. 2017

- Developed a telemetry/data collection system and a remote-controlled parachute cutoff system for a high-altitude balloon platform used for measuring changes in atmospheric electricity during weather events, advised by Prof. Morris Cohen.
- As communications team leader, led the development and integrations of sensors such as a Geiger counter, an E-field sensor and a Gamma ray sensor.

Notable Projects

DeepSponsorBlock: Detecting Sponsored Content in YouTube Videos

Stanford University • CS 230 • github.com/DeepSponsorBlock/DeepSponsorBlock Autumn 2020

- We built a Deep Learning model to detect sponsored segments in YouTube videos using the video's raw frames, using labels from the database of the crowdsourced SponsorBlock project.
- We designed an encoder-decoder architecture with a ResNet50-based encoder and a Bidirectional LSTM decoder to obtain sponsored segment predictions with an impressive 0.69 IOU score.
- Compared to the NLP approaches in existing projects with the same goal, our approach is intended to be usable on non-English videos as well as English ones.

Planning Census Worker Allocation to Maximize United States Census Response Rates

Stanford University • CS 238 • github.com/Census-MDP/Census-MDP

Autumn 2020

- We built an MDP model to produce a policy for how to best allocate census-worker visits to improve United States Census outcomes.
- We used data from the ongoing 2020 Census to infer distributions of self-reporting over time as well as the success of in-person visits.
- Goals included optimizing for maximum census participation as well as high representativeness, e.g. being able to sample proportionally from different demographic slices.

Photo Filter Identification & Inversion

Georgia Tech, CS 4476 Intro to Computer Vision

Fall 2018

- Built a Neural Network model that can identify which Instagram filter was applied on a given image (if any) with upwards of 80% accuracy.
- Developed a pseudo-inverter that guesses the unfiltered original image given a filtered image and the filter function, also minimizing quality issues due to color resolution loss from the filter, with mean absolute difference between the inverted and original images under $< 1\%$

Teaching

Course Assistant, CS 107: Computer Organization & Systems

Stanford University

Sep. 2020 - Present

- Teaching weekly labs to 30 students on topics including C programming, memory allocation, assembly programming and interpretation.

Senior Teaching Assistant, CS 2110: Computer Organization & Programming

Georgia Tech College of Computing

Aug. 2017 - Dec. 2018

- Taught 3 hr/week recitation to 75 students each semester with an effectiveness rating of 96%.
- As Senior TA, designed and managed all course materials including homework, lab assignments, exams and lecture activities for 400+ students.
- Developed a continuous grading pipeline that provides students with immediate feedback, cutting grading cycles from 2 weeks to 10 seconds.

Publications & Presentations

- S. Srivastava, C. Li, M. Lingelbach, *et al.*, "BEHAVIOR: Benchmark for Everyday Household Activities in Virtual Interactive ecOlogical enviRonments," in *Conference on Robot Learning (CoRL)*, submitted, 2021
- C. Li, F. Xia, R. Martín-Martín, *et al.*, "iGibson v2.0: An object-centric extended simulation for interactive robot learning," in *Conference on Robot Learning (CoRL)*, submitted, 2021
- C. Gokmen, J. Yang, and N. Athreya, "DeepSponsorBlock: Detection of sponsored segments in youtube videos," in *IEEE Winter Conference on Applications of Computer Vision (WACV)*, submitted, 2022
- S. Cannon, J. J. Daymude, C. Gokmen, *et al.*, "A Local Stochastic Algorithm for Separation in Heterogeneous Self-Organizing Particle Systems," in *Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques (APPROX/RANDOM 2019)*, 2019. DOI: 10.4230/LIPIcs.APPROX-RANDOM.2019.54

Skills

Languages: English (Fluent), Turkish (Native), French (Advanced).

Programming Languages: Python, Java, C, C++, JavaScript, Assembly, HTML, CSS, \LaTeX .

CS Areas: Algorithms, Artificial Intelligence, Computer Vision, Deep Learning, Robotics.