

Alperen Tercan

alperentercan06@gmail.com | alperentercan.github.io | github.com/alperentercan

EDUCATION

University of Michigan

PhD in Electrical And Computer Engineering

- Advisor: Prof. Necmiye Ozay

Ann Arbor, MI

Aug. 2023 – Present

Colorado State University

Master of Science in Computer Science - 4.00/4.00

- Co-Advisors: Prof. Vinayak Prabhu and Prof. Charles Anderson
- Thesis: Solving MDPs with Thresholded Lexicographic Ordering Using Reinforcement Learning

Fort Collins, CO

Aug. 2019 – Sep. 2022

Bilkent University

Bachelor of Science in Electrical and Electronics Engineering - 3.84/4.00

Ankara, Turkey

Aug. 2015 – May 2019

University of Oklahoma

Exchange Student in Electrical and Computer Engineering - 4.00/4.00

Norman, OK

Jan. 2018 – May 2018

RESEARCH ROLES

Research Intern

Max Planck Institute for Software Systems

- Research on task decomposition for block-based visual programming tasks and using large language models for programming
- Advisor: Dr. Adish Singla

06/2021 – 05/2023

Saarbrücken, Germany

Graduate Research Assistant

Colorado State University

- Research on multi-objective RL and using formal languages for reward specifications.
- Advisor: Prof. Vinayak Prabhu

08/2020 – 05/2021

Fort Collins, CO

TEACHING ROLES

Graduate Teaching Assistant

Colorado State University

- Taught recitations for sophomore level Discrete Mathematics course in Computer Science Department
- Graded exams and assignments

08/2019 – 05/2020 & 01/2022 – 05/2022

Fort Collins, CO

PUBLICATIONS

- A. Tercan** and C. W. Anderson, "Increased Reinforcement Learning Performance through Transfer of Representation Learned by State Prediction Model" 2021 International Joint Conference on Neural Networks (IJCNN), 2021, pp. 1-8
- A. Tercan**, A. Ghosh, H. F. Eniser, M. Christakis, and A. Singla. "Synthesizing a Progression of Subtasks for Block-Based Visual Programming Tasks" AAI 2024 Workshop on AI for Education

UNDER REVIEW

- A. Tercan** and V. Prabhu. "Thresholded Lexicographic Ordered Multi-Objective Reinforcement Learning"

AWARDS

- **Colorado State University Funding Guarantee (2019-2022):** Admission with guaranteed assistantship positions with full tuition waiver & stipend benefits during the MSc program)
- **Scholarship of the Turkish Prime Ministry (2015-2019):** Awarded monthly stipend during the BSc program (given to those who rank in first 100 among 1.8 million students in nationwide university entrance exam)
- **Bilkent University Comprehensive Scholarship (2015-2019):** Full tuition waiver & stipend during BSc
- **Nationwide University Entrance Exam (2015):** Ranked 25th among 1.8 million students in Turkey

ENGINEERING ROLES

- Engineering Intern** 06/2018 – 09/2018
Fraunhofer IIS Nuremberg, Germany
- Implementation of Record and Replay functionalities of GOOSE receiver
 - VHDL design of the components on FPGA
 - Python programming on ARM processor for request processing
 - C programming for FX3 USB3.0 interfacer
- Summer Intern** 06/2017 – 07/2017
Karel Electronics Ankara, Turkey
- Embedded C Programming on 8051 microcontrollers for the interface of a communication product. It takes input from the user through serial port and adjusts components. SPI and I2C protocols are used.
 - Tested the product software above and revised it according to client feedback.

PROJECTS

- Distributed Generative Adversarial Networks** | *PyTorch, Horovod* 2022
- Distributed training of a generative model that can create artificial paintings.
- User Study Platform for Block Based Programming** | *JavaScript, Django* 2021
- Created a website to be used in the user studies for our paper.
- Stateful Next Generation Access Control for Fire Response Control** | *Alloy* 2021
- Augmented NGAC framework with multi-level rule hierarchy and stateful policies.
 - Showed how Alloy can be used to analyze an NGAC policy with an environment model.
- Software Optimizations for Reinforcement Learning** | *Tensorflow* 2020
- Investigated effects of weight clustering in RL
- Reinforcement Learning for Combinatorial Optimization over Graphs** 2020
- Surveyed several papers in this field with a focus on possible future research directions
- Implementation of Ranking-Critical Training for Collaborative Filtering** | *PyTorch* 2020
- A personal project to better understand the use of RL for recommender systems.
- Policy Gradient Methods and Hierarchical RL for Robotic Control Tasks** | *PyTorch* 2019
- Implemented DDPG, HER, Option-Critic, Modulated Policy Hierarchies
 - Experimented on Mujoco Environments to test benefits of Hierarchical Reinforcement Learning.
- Detection and Jamming of Wide Band FHSS Radio Signals** | *MATLAB, C, Bash* 2019
- Works on a Zynq-7000 board and controlled via a computer GUI
 - Quickly detects active bands in FHSS communication and generates the signal to jam it.
- Image Reconstruction in cr-MREPT via Iterative Methods** | *MATLAB* 2018
- Implemented genetic algorithms and gradient descent for matrix optimization in MREPT domain
 - Investigated benefits of iterative methods in reconstructing Low Convection Field(LCF) regions
- Playing Tetris using Evolutionary Algorithms and Reinforcement Learning** | *Python* 2018
- Implemented Q-learning and a genetic algorithm agents that learn to play Tetris.
- Race Bias in NY Mortgage Decision Data by Feature Importance Analysis** | *Tensorflow* 2018

- Fitted several models to the mortgage decision data to model decision process.
- Used permutation feature importance to measure importance of various applicant data in Mortgage decisions and tested if race was a significant factor in the decisions.

Empirical Study on CAPM with Traditional and Machine Learning Methods | *MATLAB* 2018

- Tested performance of CAPM on stock prices with covariance-based, regression-based, and reported betas.

Maze Solving Robot using 8051 Microcontroller | *Assembly* 2017

- Robot uses proximity sensors to perform a tree search in a maze
- Keeps track of the movements via Hall sensors and draws the explored maze on a LCD screen

Tic-Tac-Toe Game with Rule Based Bot | *VHDL* 2016

- A Tic-Tac-Toe game with VGA that runs on BASYS3 board.
- Rule-based bots with three different difficult levels.