Thomas Wei

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EDUCATION & SKILLS

Carnegie Mellon University Fall 2021 – Spring 2023
M.S. in Robotics

The University of Texas at Austin Fall 2017 – Spring 2021
B.S. in Electrical and Computer Engineering & B.S. in Mathematics
Cumulative GPA: 3.94/4.00

Graduate-Level Coursework: Probability and Stochastic Processes, Machine Learning, Convex Optimization
Skills: Python, C++, C, PyTorch, Java, NumPy, pandas, scikit-learn, ROS, bash, MATLAB, LabVIEW, JavaScript

CONFERENCE PUBLICATIONS, WORKSHOPS, & ABSTRACTS

Extending Policy Shaping to Continuous State Spaces (Student Abstract)
Thirty-Fifth AAAI Conference on Artificial Intelligence 2021
by **Thomas Wei**, Taylor K. Faulkner, and Andrea L. Thomaz

TASC: Teammate Algorithm for Shared Cooperation
IEEE/RSJ International Conference on Intelligent Robots and Systems 2020
by Mai L. Chang, Taylor K. Faulkner, **Thomas Wei**, Elaine S. Short, Gokul Anandaraman, and Andrea L. Thomaz

Vedebug: Regression Debugging Tool for Java
International Conference of Software Engineering 2019, Tool Demonstrations Track
by Ben Buhse, **Thomas Wei**, Zhiqiang Zang, Aleksandar Milicevic, and Milos Gligoric

WORK EXPERIENCE

Professor Andrea Thomaz's Socially Intelligent Machines Lab – Research Assistant Spring 2019 – Summer 2021
- Designed extension of the interactive reinforcement learning algorithm Policy Shaping to continuous state spaces
- Used PyTorch to implement Deep Policy Shaping with modified loss function and ensembling with shared base
- Compared the performance of Deep Policy Shaping against baselines in a MuJoCo task within OpenAI Gym
- Implemented and trained Convolutional Autoencoder with PyTorch to use as a feature extractor for a Deep Q Network

Professor Milos Gligoric's Research Group – Research Assistant Summer 2018 – Spring 2019
- Built novel interactive time-travel regression debugger for Java with video-like GUI that permits navigation to divergence and reconvergence points between executions in addition to normal interactive debugger features
- Implemented execution trace analysis and developed command-line interface using ncurses to aid in visualization
- Delivered presentation and demonstration at International Conference of Software Engineering 2019 in Montreal

UT ECE Algorithms (EE 360C) Teaching Assistant – Teaching Assistant Spring 2019
- Creating and grading written homework assignments, quizzes, and exams to support Professor Christine Julien
- Designing and evaluating programming assignments in Java that allow students to apply algorithms theory in code

PROJECTS

Deep LSTM Human Mobility Prediction Fall 2020 – Spring 2021
- Implemented Deep LSTM that parameterizes Gaussian Mixture Model with PyTorch to predict real-valued sequences
- Trained Deep LSTM on Amazon X-Mode geolocation data to predict future movement from individual histories

Gaussian Process Hyperparameter Analysis of Human Arm Motion Trajectories Spring 2020
- Implemented Gaussian Process Regressor in Python and fit regressors to trajectories of humans tracing 3D curves
- Used gradient-ascent hyperparameter optimization for model selection on fits of entire trajectories and small intervals
- Clustered intervals by hyperparameters to find a correlation with the muscle contractions that produced the trajectories

Robocup@Home 2018 Spring 2018 – Summer 2018
- Collaborated with a team of 24 members in automating household activities using the TOYOTA Human Support Robot
- Used Point Cloud Library to create a shelf segmentation service in Robotics Operating System to store groceries
- Worked on high-level integration of several human detection technologies to create a person following system