Shao-An (Sean) Yin

say4@uw.edu | 206-480-9199 | Github:// drrdrem

EDUCATION

University of Washington, Seattle, WA Jun. 2019

■ *Master of Science* in Mechanical Engineering, focus on *Robotics, Data Science and Algorithms*

- Related Courses: Markov decision optimization, data-driven optimization, design and analysis of algorithms, stochastic processes in engineering, computer vision, digital signals processing, nonlinear optimal control.

National Taiwan University, Taipei, Taiwan Jun. 2016

■ *Bachelor of Science* in Mechanical Engineering, focus on *Automatic Control and Robotics*

WORKING EXPERIENCES

UW BioRobotics Lab| Voluntary Research Assistant, Seattle Jan. 2019 – Present

- Developed Augmented behavior trees (ABTs) embedded hidden Markov models (HMMs) and extending Coxian phase type distribution with the execution success/failure probabilities in the context of medical procedure tracking based on clinical healthcare medical records.
- Worked with UW Medicine to provide statistical analysis of clinical healthcare data.
- Built a clinical data pre-processing pipeline in Python and implemented Recurrent Neural Network (RNN) sequence embedding in PyTorch.

UW Dr. Sheng Wang's Lab| Summer Research Intern, Seattle Jul. 2020 – Sep. 2020

- A deep reinforcement learning based text retrieval related project (submitted to AAAI 2021).

Allen Institute for Brain Science | Research Intern, Seattle Jun. 2018 – Aug. 2018

- Designed a controller of the neuron's dynamical model optimized by the genetic algorithm with 91% accuracy to control the excitability of neurons in hippocampus in the context of seizure control.
- Analyzed neurons' morphological data and electrophysiological data based on various machine learning techniques.
- Conducted statistical testing on large data sets resulting from biophysical simulations.
- Built a data visualization and analysis toolbox in Python under Brain Modeling Toolkit (BMTK) framework.

Taiwan Semiconductor Manufacturing Company (TSMC) | Big Data Engineer, Taiwan Oct. 2020 – Present

- Developed models to facilitate manufacturing processes based on cross-factory historical fabrication information.

Dragoncloud.ai| Part Time, Remote Apr. 2020 – Aug. 2020

- Developed a Computer Assisted Language Learning (CALL) system to help non-native speakers improve their foreign language pronunciation.
- Built a speech and phonemes sequence to sequence forced alignment with Connectionist Temporal Classification (CTC)-LSTM decoding in Pytorch.

Tiny Machine and Mechanics Laboratory | Research Assistant, Taiwan Sep. 2015 – Aug. 2016

- Developed an Electroencephalography (EEG) controlled Exoskeleton to help the disabled regain their mobility.
- Extracted physical control commands' features from people's brainwaves recordings' through wiener filter and developed people's motion pattern recognition with short-time Fourier transform and wavelet analysis.

SELECTED PROJECTS

CNN-based gaze detection | Course Project Apr. 2018 – Jun. 2018

- Developed a CNN model to predict users' gaze location on their laptop screen to help people move the cursor.
- Implemented RANSAC alignment and an image stitcher in C++.
- Trained and Implemented a CNN classifier with LeNet-5-multiclass SVM architecture using TensorFlow with 75% accuracy and with 10%+ improvement compared to vanilla LeNet-5 architecture.

OpenAI Based control policy deep reinforcement learning | Course Project Sep. 2018 – Dec. 2018

- Developed a virtual agent to learn a continuous control policy from diverse environments in OpenAI GYM environment.
- Implemented Advantage Actor Critic (A2C) algorithm and Trust Region Policy Optimization (TRPO) algorithm.
- Compared and analyzed A2C and TRPO algorithms' convergence performance of loss to learning speed.

SKILLS

■ **Robotics**: randomized algorithms, statistics, optimization, Markov decision processes

■ **PROGRAMMING**: Python • C++ • C • MATLAB • SQL

PUBLICATION

Learning to Read via Reinforcement Learning (Submitted to AAAI2021)