

Shao-An (Sean) Yin

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EDUCATION

University of Minnesota , Twin City, MN	Jun. 2024
■ <i>Doctor of Philosophy</i> in Electrical/ Computer Engineering, focus on <i>Distributed Optimization Algorithms and Robotics</i>	
University of Washington , Seattle, WA	Jun. 2019
■ <i>Master of Science</i> in Mechanical Engineering, focus on <i>Applied Optimization, Algorithms and Robotics</i>	
National Taiwan University , Taipei, Taiwan	Jun. 2016
■ <i>Bachelor of Science</i> in Mechanical Engineering, focus on <i>Automatic Control and Robotics</i>	

WORKING AND RESEARCH EXPERIENCES

Dr. Nicola Elia's Group Research Assistant, Minneapolis	Sep. 2021 – Present
- Distributed Optimization Algorithms and their applications in robotics.	
Taiwan Semiconductor Manufacturing Company (TSMC) Engineer, Taiwan	Oct. 2020 – Jul. 2021
- Built Image-based Unsupervised Anomaly Detection models to facilitate manufacturing processes based on cross-factory historical fabrication measurement information.	
- Developed internal Image-Retrieval Engine at TSMC with the state-of-the-art metric embedding models.	
UW Dr. Sheng Wang's Lab Summer Research Intern, Seattle	Jul. 2020 – Sep. 2020
- Developed Reinforcement Learning Agents for smart references selection in a sequential manner to help humans' construction of knowledge (submitted to AAAI 2021).	
UW BioRobotics Lab Research Assistant, Seattle	Jan. 2019 – Jun. 2020
- Developed Augmented behavior trees embedded Graphical Models 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.	
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.	
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
- Trained and Implemented LeNet-5-multiclass SVM architecture using TensorFlow with 75% accuracy and with 10%+ improvement compared to vanilla LeNet-5 architecture to predict users' gaze location on their laptop screen.	
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.	

SKILLS

- **Algorithms:** randomized algorithms, statistics, optimization, Markov decision processes
- **PROGRAMMING:** Python • C++ • C • MATLAB • SQL