Jiawei Sun

✉ sunmessi@gmail.com
⌂ sjwramsey.github.io/jiaweisun.github.io/

Education

August 2015 – July 2019	**Northwestern Polytechnical University**, Xi'an, China. B.Eng. in Information Engineering **GPA:** 89/100, **Rank:** 1/50
August 2019 – April 2021	**University of Michigan**, Ann Arbor, MI. M.Eng.(Expected) in Electrical and Computer Engineering **GPA:** 4.0/4.0

Publications and/or Manuscripts

April 2020	**Modelling learning in C. elegans chemosensory and locomotive circuitry for T-maze navigation** Sakelaris B., **Sun J.***, Li Z.*, Banerjee S., Booth V. and Gourgou E. *co-second author

Research Experiences

Sep 2019 – Present	**Image Processing to decipher C. elegans locomotion in mazes**, Advisor: Research Scientist Eleni Gourgou. Working on finding the motion trails of the elegans ○ Use the chan-vese active contour method and SVD to extract contours of the maze ○ By the Procrustes Transformation method, a T-shape polygon is rotated and shifted to have maximal overlap with the extracted contour ○ Apply the Frame Difference method to find motion trails of the elegans ○ Use the the K-Nearest Neighbor (KNN) algorithm to smooth the motion trails
Jan 2020 – Present	**Deep Neural Network for Spectrum Unfolding**, Advisor: Professor Alfred Hero . Working on Recurrent Neural Network (RNN) algorithm ○ Propose the RNN architecture that mimics project gradient descent method from optimization theory ○ Complete the Recurrent Neural Network code by Pytorch
March 2018 – June 2018	**Differential Microphones Arrays based on Differential Equation**, Advisor: Professor Jie Chen and Professor Lijun Zhang. Worked on Differential Microphones Arrays based on Differential Equation ○ Proved that the polynomial of sinusoidal function is the solution of a differential equation and the differential equation corresponding to LDMA and CDMA are same
May 2017 – October 2017	**Distributed PCA by the Primal-Dual Method of Multipliers (PDMM)**, Advisor: Professor Jie Chen. Worked on Distributed Optimization Algorithm ○ Distributed PCA method can be obtained by simply approximating the global correlation matrix via the Average Consensus Algorithm subroutine, so matrices are divided in columns ○ Eigenvalue decomposition of the correlation matrix and reduced its dimension to p-dim by PDMM algorithm ○ Programmed in Matlab to accomplish Distributed PCA

Selected Awards and Honors

November 2018	**Honorable Mention of the International Mathematical Contest in Modeling**.
November 2017	**First Prize Scholarship**, Northwestern Polytechnical University. Top 15% in 200 students
November 2016	**National Scholarship**, Northwestern Polytechnical University. 0.2% national wide)

Selected Course Projects

March 2018	**Development of Microphone Orientation System**. Achieved communication between two computers. Achieved source coding by ASIC code and adopted 2FSK modulation based on MATLAB.
January 2018	**Communication System Design**. Accomplished acoustic localization by Conventional Beamforming method and Direction of Arrival (DOA) location method

Skills

Programming Languages: Matlab, Julia, Python, HTML, LaTeX, Pytorch