SIZHU (LINDSAY) CHENG

Palo Alto, CA 94304
(310)-745-0635 ⋄ szcheng0702@gmail.com

EDUCATION

Stanford University *Septembmer 2017 - June 2019*
M.S. Computational & Mathematical Engineering GPA: 3.61

University of California, Los Angeles *July 2013 - June 2017*
B.S. Applied Mathematics and *B.S.* Neuroscience. GPA: 3.71
Honors: Cum Laude, Deans List, ALD | PES Honor Society, Golden Key International Honor Society

RELEVANT EXPERIENCE

Neeva December 2019 - Present
Software Engineer *Mountain View*

· Represent neural mechanism using deep learning model given electrical step inputs
· Conduct the experiment to reveal the intertwined neural signal information using Recurrent Neural Network model
· Extend the system into a more in-depth dynamics which represented the human neural activities during prediction of environmental changes

Stanford University School of Medicine, Neurobiology Department April 2019 - December 2019
Graduate Research Assistant *Palo Alto*

· Represent neural mechanism using deep learning model given electrical step inputs
· Conduct the experiment to reveal the intertwined neural signal information using Recurrent Neural Network model
· Extend the system into a more in-depth dynamics which represented the human neural activities during prediction of environmental changes

Stanford University, Psychology Department January 2019 - June 2019
Graduate Research Assistant *Palo Alto*

· Studied mathematical cognition and the development of human abilities to obtain mathematical perceptions
· Designed a deep neural network model to study how human learn magnitude comparison and simple addition for one-digit numeral
· Analyzed and interpreted how approximate arithmetic training may affect preschoolers performances in simple math problems

SAP Labs, LLC June 2018 - August 2018
iXp Intern - Applied Data Science and Machine Learning (NLP), Recast Conversational AI *Palo Alto*

· Helped create a platform for collaborative chatbots satisfying various needs from customers
· Tested 50+ different combinations of encodings and clustering algorithms on data with ground truth
· Applied the best algorithm to cluster the data without ground truth and output the results based on how dense the clusters are, and collaborated with the front-end team so that users can easily visualize the suggested sentences based on intents when creating chatbots
· Incorporated more embeddings and similarity computation methods into the existing algorithms

UCLA Math Department September 2016 - June 2017
Programming in Computing Reader *Los Angeles*

· Helped instructors create the grading rubrics
· Graded homework in Introduction to Programming (C++) course and provided feedback to students about their algorithm

PROJECTS

Stanford CS 224N (Natural Language Processing with Deep Learning) Final Project Winter 2019
Simple Mathematical Word Problems Solving with Deep Learning

· Preprocessed the complicated AQUA-RAT dataset and extracted all mathematical equations using regular expressions from the given explanation of multiple choices questions
· Implemented Transformer Network and Bidirectional GRU-LSTM RNN with attention units to conduct seq2seq task, which generates a set of mathematical equations that can solve the given algebraic word mathematical problems with a moderate level of performance

Stanford CS 221 (Artificial intelligence principles and techniques) Final Project Fall 2018
AI Agent for the Atari Game Phoenix

· Built an AI agent to play the game Phoenix using Deep Q-learning Network (DQN)

· Coordinated with teammates and implemented the Monte Carlo Tree Search (MCTS) Algorithm as a faster alternative

Stanford CS 230 (Deep Learning) Final Project Spring 2018
Video Interpolation of Human Motion

· Constructed the baseline Encoder-Decoder Model to interpolate the intermediate frames when the start and end frames of a video are given
· Designed a 3D Convolutional Neural Networks (CNN) and recurrent CNN (rCNN) and tuned hyperparameters to improve the quality of the frames interpolated

Stanford CME 307 (Optimization) Final Project Winter 2018
Sensor Network Localization

· Tackled the Sensor Network Localization (SNL) problem using Second Order Cone, Semidefinite Dual and Least Square methods
· Adopted Alternating Direction Method with Multipliers (ADMM) with certain permutations to speed up the process in solving 3D SNL problems with 10 sensors

Stanford CS 229 (Machine Learning) Final Project Fall 2017
Fake News Stance Detection

· Extracted features including N-gram, word sentiments, polarity and cosine similarities from 75385 newspaper articles
· Performed multinomial Bayes, SVM, softmax and multi-layer Neural Network on the above features from training set and dev set
· Chose the best algorithm to predict whether the newspapers headline agrees/disagrees/discusses/is unrelated to its body

UCLA Math 156 (Machine Learning) Final Project Spring 2017
Gaussian Mixture Models (GMM) for Digit Clustering

· Conducted Principal Component Analysis (PCA) on MNIST dataset to reduce the datas dimensionality
· Implemented the Expectation Maximization algorithm of GMM using MATLAB, and fed it with 14000 sets of training data
· Tested the algorithm using the testing data, and compared the results to that of the MATLAB-implemented k-means algorithm

ADDITIONAL EXPERIENCES

Deloitte Enterprise Consulting (Shanghai) Co., Ltd. Shenzhen Branch Summer 2016
Enterprise Risk Service, Financial Service Industry Intern *Shenzhen, China*

· Reviewed the manual of constructing online risk-management systems for companies, and edited the manual according to requests from customers
· Collected risk-management information from annual reports of various securities companies, and organized information for supervisors reference
· Discussed and consulted with group members best modeling strategies for every particular case

UCLA David Geffen School of Medicine, Neurology Department January 2016 - June 2017
Undergraduate Research Assistant *Los Angeles*

· Studied the pathology of Parkinsons Disease by conducting behavioral experiments on zebrafish with a small team
· Monitored the movements of zebrafish using Viewpoint software to focus on transgenic genes pathological in Parkinsons Disease
· Analyzed the behavior data, including over 10,000 speed data, which reflects instantaneously the motion of the fish above a certain threshold
· Imaged the neuron distributions inside the fish bodies and counted any significant loss of neurons

SKILLS

Programming Languages	C++, Matlab, Python, SQL, HTML, Shell script, LaTex, Markdown, Julia
Tools	Kubernetes, Databricks, Spark, Tensorflow, Pytorch, Airflow, Grafana
Application software	ImageJ, MS Word, Excel, PowerPoint and Outlook

PUBLICATIONS

Sizhu Cheng, Arianna Yuan. *Understanding the Learning Effect of Approximate Arithmetic Training: What is Actually Being Learned?*
Paper accepted for the 17th Annual Meeting of the International Conference on Cognitive Modeling, Montreal, Canada

Sataree Khuansuwan, Lisa M. Barnhill, **Sizhu Cheng**, and Jeff M. Bronstein. *A novel transgenic zebrafish line allows for in vivo quantification of autophagic activity in neurons*, Autophagy 2019

SERVICE ACTIVITIES

Stanford Women in Math Mentoring, Stanford University Fall 2017 - Present
Mentor *Palo Alto*

· Provides advises to women undergraduates who consider graduate school in mathematical fields
· Assists women undergraduates in arranging their undergraduate studies and facilitates them to find their career goals

Global Medical Training, UCLA Spring 2015 - Spring 2017
Medical Donation Commitee *Los Angeles*

· Contacted past donors, including local hospitals, health centers, and other organizations for medical supplies
· Worked with fundraising team to raise funds to purchase the necessary medications and medical equipment
· Searched and applied for grants to raise funds for the committee and wrote applications when necessary