Jingyuan He

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Education

- **Carnegie Mellon University** *Aug 2023 - May 2025*
  Master of Science in Intelligent Information Systems.
- **University of California, San Diego** *Aug 2020 - June 2023*
  Bachelor of Science in Mathematics-Computer Science, minor in Computer Engineering. HKN-IEEE. GPA: 3.94/4.0

Experience

- **Undergraduate Research Assistant at THE COTTRELL LAB** *6 Months, 2023*
  – Work on the Mixture of Experts project under the lead of Shivaank Agarwal and guidance of Professor Garrison W. Cottrell, UCSD. The project aims to develop a mixture network of words, objects, and faces experts to confirm the subordinate level image classification capacity of Fusiform Face Area based on the expert hypothesis.
- **Reader/Grader of MATH184: Enumerative Combinatorics, UCSD** *2.5 Months, 2022*
- **Web Developer Intern at The Yiddish Arts and Academics Association of North America** *3 Months, 2022*
  – Work front-end with plugins, page builders, HTML, CSS, and JavaScript to develop and update Wordpress-based websites in an efficient and easy-tonavigate manner.
- **Technical Intern at Guangxi Communication Planning and Design Consulting Corporation** *1 Week, 2021*
  – Distill repeated task in the task scheduling system by comparing task and company names with their acronym. Task were filtered out if semantic similarity score bewteen the acronym of the longer task/company name and the shorter name is greater than 85%.
  – Exact boundaries points from public BaiduMap API system by python and store them into mySQL database.

Projects

- **Transformer-Based User Intent Classification on Amazon Massive Intent Dataset** *2022*
  – Work in a 5-people group and use the sentence-level classification from pre-trained BERT model on the 60 classes of user intent with an accuracy of 87.32%. Use UMAP to compare the first ten class clustering on super contrastive learning, cross-entropy loss, and simple contrastive learning.
- **Image Captioning with Convolutional Neural Networks and LSTM** *2022*
  – Work in a 3-people group to implement encoder-decoder network based on custom CNN or modified pre-trained ResNet-50 connected to a LSTM network that generates captions of the images from COCO dataset. The best model achieves an average of 58.04% BLEU1 score. The best caption achieves 86.53%-100% BLEU4 scores.
- **Book Genre Classification** *2022, 2020*
  – Train a Bag-of-Words based logistic regressor on user review with an accuracy of 78.42%, ranked 5/505 in CSE158 leaderboard. Train a binary classifier on user-book pair based on similarity and popularity threshold that predicts if the book is read with an accuracy of 75.75%, ranked 108/506 in CS158 leaderboard. Use of scikit-learn.
  – Train a tree-based classifier under the help of teacher at HiElites International AI Summer Camp. Improve the accuracy of the program from 65% to 88%. Use of tensorflow, DecisionTree, and RandomForest.
- **Numerical Analysis Algorithms Implementation and Calculation Application** *2022-ongoing*
  – Implementation of linear algorithms like GEPP, QR Decomposition, Francis Iteration for eigenvalue computations.
  – Working on an Android application that handles eigenvalue and singular value computations of input matrices.
  – Implementation of non-linear algorithms like Gold-Section-Search, Nelder-Mead, Newton's Method, Cubic Splines.
- **ZooSeeker Android Application Development Project** *2022*
  – Work with java on Android Studio in a 5-people team following Agile Management to develop ZooSeeker, an Android application that offers real-time or mock navigation towards the actual exhibits of San Diego Zoo.
- **Seeking Utopia - Unity Game Design and Develop Project** *2020*
  – Work on Unity with public asset packages and construct a dynamic three-level game, "Seeking Utopia", which consists of event-triggered conversations, keyboard-triggered jumping motions, and collisions.

Technical Skills and Interests

Programming Languages: python, java, R, HTML, CSS
Intermediate Programming Languages: c++, c, Matlab, JavaScript, mySQL, Assembly, SystemVerilog
Developer Tools: Pytorch, Linux, Android Studio, Unity, TensorFlow, scikit-learn, OpenCV
Areas of Interest: Natural Language Processing, Multimodal Machine Learning, Stochastic Process, Graphs Theory and Probabilistic Combinatorics, Studio Design

Coursework

- Operating Systems, Deep Learning, Recommender Systems, Data Structure, Algorithms, Architectures.
- Abstract Algebra, Stochastic Process, Extremal Combinatorics, Statistics, Numerical Analysis