

TIANYI LI

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ACADEMIC HISTORY

University of Michigan, Ann Arbor, U.S. <ul style="list-style-type: none">• B.S.E. in Computer Science (<i>Minor in Mathematics</i>)• GPA: 3.93/4.00	<i>Sep. 2020 - Jul. 2022 (expected)</i>
Shanghai Jiao Tong University, Shanghai, China <ul style="list-style-type: none">• B.S.E. in Electrical and Computer Engineering• GPA: 3.62/4.00	<i>Sep. 2018 - Jul. 2022 (expected)</i>

RESEARCH EXPERIENCE

LLEX Research Lab - University of Michigan <i>Supervisor: Prof. Paramveer Dhillon and Prof. Daniel Romero</i>	<i>Ann Arbor, U.S. Jan. 2021 - Present</i>
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Data-driven Predictive Methods for Global Consensus

- Developed an automatic scheme on integration and maintenance of a NoSQL Database of global demographics upon the lab server.
- Implemented a multithread algorithm on *Wikipedia's* MediaAPI coordination to realize parallel index process and data access, achieving a 5x acceleration.
- Proposed a bi-char LSTM architecture to predict individuals' demographic features, achieving an accuracy of 83%.
- Participated in paper writing (10%) and primary data analysis (50%).

Peisen Lab - Shanghai Jiao Tong University <i>Supervisor: Prof. Peisen Huang</i>	<i>Shanghai, China May 2021 - Aug. 2021</i>
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VR Simulation for Vision-based Absolute Planar Encoder

- Embedded an auto-sizing pattern encoder based on the de Bruijn Algorithm.
- Accomplished a corresponding decoder using Computer Vision and DFT phase estimation, reaching a resolution of 1mm.
- Realized a real-time VR Simulation by achieving a six-degree-of-freedom coordinate resolver within millisecond response.

Mood Disorder Lab - Shanghai Mental Health Center <i>Supervisor: Prof. Shenxun Shi</i>	<i>Shanghai, China Mar. 2021 - May 2021</i>
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Statistical Analysis on Gene Expression for Depression

- Established a series of statistical models on depression diagnoses to investigate impact via gene expressions using R, reaching 0.831 in ROC metric.
- Pinpointed crucial key genes that dominate mental disorders via multivariate regressions.

Yifeiyao Lab - Shanghai Jiao Tong University <i>Supervisor: Prof. Yifei Yao</i>	<i>Shanghai, China Mar. 2020 - Oct. 2020</i>
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Carpal Tunnel Syndrome Detection and Segmentation via CNN

- Established an ultrasonography-based neural network architecture to detect Carpal Tunnel Syndrome (CTS), meanwhile improving the performance by utilizing data augmentation and transfer learning.
- Developed a CNN-based encoder-decoder sonograph segmentation method of the median nerves for morphological feature extractions, reaching a 17% boost in accuracy.

Detecting Problem Statements in Peer Assessments

- Established and polished a compact model composed of an upstream BERT encoder and downstream LSTM layers for peer assessment analysis, reaching an accuracy of 93.1%.
- Applied transfer learning to investigate connections between different subjects.
- Led the final demonstration and presentation at the Expo in a group of four.

SELECTED PROJECTS

Instagram Clone

Group Leader.

Jan. 2021 - Mar. 2021

- Designed an Instagram-like frontend client-dynamic page interface using JavaScript, HTML, and CSS.
- Developed a backend database and privacy management system using Flask and SQLite.
- Formatted codes in professional standards under *pylint*, *eslint*, *pydocstyle* and *pycodestyle* protocols.

AlphaGo-Enlightened Master of Reversi

Side Project.

Dec. 2020 - Jan. 2021

- Developed a combinational architecture of MCTS and RNN towers to master the game Reversi, referring to the working principle of AlphaGo Zero from scratch.
- Applied transfer learning to enable the modified models to master tic-tac-toe and five-in-a-row.

Prediction on Lifetime of Aero-engines

Contestant.

Mar. 2020 - May 2020

- Researched remaining lifetime predictions for aero-engines based on a time-sequential dataset of the engine's parameter indices.
- Established a combinational model of upstream unsupervised learning and downstream LSTM-based supervised learning for the prediction, winning the Excellence Award among 70 groups.

TEACHING EXPERIENCES

SU19 FA20 Physics Lab I & II

Teaching Assistant, Shanghai Jiao Tong University

AWARDS AND HONORS

2021, 2020 **University Honors**, University of Michigan

2021, 2020 **Dean's List**, University of Michigan

2021, 2020 **Annual Teaching Assistant Nomination**, Shanghai Jiao Tong University

2020 **Excellence Award of Aeroengine Lifetime Predictions**, Foxconn

ACADEMIC SKILLS

- **Basic Languages:** Python, C/C++, C#, Java, R, Matlab, JavaScript
- **Web Systems:** HTML, JavaScript, CSS
- **Database Management:** SQLs, Hadoop, NoSQL, SparQL
- **Machine Learning:** Tensorflow, Pytorch, Hugging Face, OpenCV, NLTK, CUDA Programming
- **Mathematics:** Linear Algebra, Probability and Statistics, Numerical Analysis, Linear Programming

PUBLICATIONS

- *Detecting Problem Statements in Peer Assessments*, arXiv:2006.04532

Second Author