ZHIHENG (JAMES) JIANG

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PROFESSIONAL EXPERIENCE

AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH **Singapore**

Institute of High Performance Computing (IHPC)

Research Assistant **2020-2021**

- Conducted social network analysis research under the mentorship of Dr Hoai Nguyen Huynh
- Developed research methodology to analyze metal music genre community structure
- Introduced Natural Language Processing and Text Mining techniques to retrieve information from reviews
- Published paper as First Author in Springer Social Network Analysis and Mining journal
- Presented at the Singapore Science and Engineering Fair (Gold Award)

NANYANG TECHNOLOGICAL UNIVERSITY **Singapore**

School of Physical and Mathematical Sciences

Research Assistant **2018-2019**

- Conducted Natural Language Processing research under Assoc Prof Cheong Siew Ann
- Developed research methodology to summarize narratives (eg. Sherlock Holmes) into an agency network
- Presented paper at Singapore Youth Science Conference (Distinction) and International Science Youth Forum
- Presented poster at the Singapore Science and Engineering Fair (Finalist)

EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES **Los Angeles, CA**

Bachelor of Science, Computer Science and Engineering **2024-2028**

PUBLICATIONS

Unveiling Music Genre Structure through Common-Interest Communities **2022**

Springer Social Network Analysis and Mining, Volume 12, Article 35

Who is the Greatest? Maradona or Pelé? Biles or Khorkina? **2021**

International Mathematical Modelling Challenge

Flash Sale **2020**

International Mathematical Modelling Challenge

PROJECTS

Today I Learnt (**TIL**) **Artificial Intelligence Competition** (**Advanced Category Champion**) **2024**

- Achieved the Champion Award in the Advanced Category, competing with university students in Singapore
- Fine-tuned 3 different deep learning models on downstream tasks in Natural Language Processing (Question Answering), Vision Language Modelling (Object Detection and CLIP) and Automatic Speech Recognition
- Developed strong expertise in adapting large pretrained models on HuggingFace
- Deployed models via Docker containers, and executed models on a robotics task using DJI Robomaster
- Worked with Google Cloud Platform, VertexAI and Google Cloud Artifact Registry

Today I Learnt (**TIL**) **Artificial Intelligence Competition** (**Pre-Tertiary Category Champion**) **2021**

- Gained experience using PyTorch to train models for object detection and speech recognition

International Mathematical Modelling Challenge (**Who is the Greatest?**) **2021**

- Determined the Greatest of All Time in individual and team sports, using mathematical modelling
- Utilized algorithms such as the Floyd Warshall algorithm and centrality measures
- Conducted sensitivity analysis of model
- Won Outstanding Award (Top 2 internationally)

International Mathematical Modelling Challenge (**Flash Sale**) **2020**

- Developed objective function to estimate the "destructiveness" of a particular arrangement of goods, when there are many customers during a flash sale
- Used a Genetic Algorithm to optimize the position of goods on shelves in a store during flash sale, to minimize possible damage
- Won Honorable Mention Award (Top 2 in Singapore)

3D Physics Simulation with Python and Glowscript (**TowardsDataScience**) **2020**

- Proposed and developed physics animations with Python and Glowscript to help classmates visualize movement of charged particles and better grasp concepts in Electromagnetism
- Published article in TowardsDataScience

Visualizing Neighborhoods by Clustering Road Networks (**TowardsDataScience**) **2022**

- Parsed road network data on OpenStreetMap with Python
- Experimented with different clustering methods and compared them with governmental district lines
- Published article in TowardsDataScience

Investigating the effectiveness of Genetic Algorithms in character strength-based grouping of people **2020**

- Developed a genetic algorithm to group classmates together based on their top 5 MBTI personality traits
- Represented each student as a vector of personality traits, and classified them based on cosine similarity
- Published report during school Science and Math Talent Programme Project Fair

SELECTED AWARDS

Today I Learnt (TIL) Artificial Intelligence Competition, Advanced Category Champion **2024**
Hon Chiew Weng Science Research Award **2022**
International Mathematical Modelling Challenge, Outstanding Award (Top 2 International) **2021**
Singapore Science and Engineering Fair, Gold Award **2021**
Today I Learnt (TIL) Artificial Intelligence Competition, Team Champion **2021**
Shopee Code League, Top 15 **2021**
Singapore National Olympiad in Informatics, Silver Award **2020**
International Mathematical Modelling Challenge, Honorable Mention **2020**
Agency for Science, Technology and Research (A*STAR) Science Award **2020**
Singapore Youth Science Conference, Distinction **2018**

SKILLS AND CERTIFICATIONS

- Technical Skills: Python (Machine Learning), C++, MATLAB, LaTeX
- Certifications:
    - MATLAB Fundamentals by MathWorks
    - Introduction to Quantum Computing by The Coding School and IBM