Ke Wang

wan00802@umn.edu | (612)-490-3313 | https://github.com/KAIwangke
1112, 311 Harvard Street, Minneapolis, MN 55414

EDUCATION

University of Minnesota, Twin Cities **Minneapolis, MN**
Bachelor of Arts in Computer Science Sept. 2021 – Dec. 2022

Xiamen University Malaysia (Transfer) **Selangor, Malaysia**
Bachelor of Engineering in Computer Science and Technology (*Honors*) Sept. 2018 – May 2021
- Silver Medal in Xiamen University Malaysia Mathematics Competition (Top 3)

RESEARCH EXPERIENCES

***Undergraduate Research Assistant,* University of Minnesota**
Advisor: Prof. Vipin Kumar Apr. 2022 – Present
- Developed supervised and unsupervised algorithms for classification in global reservoir and lake, surface area timeseries (ReaLSAT), and analysis and monitoring the global scale water bodies;
- Analyzed over 560,000 satellite derived data using ResNet152, Transformer and Variational Autoencoder with time series clustering;
- Leveraged programming acumen to build a spatial temporal classifier which is able to identify global rivers and over 28k global structures using satellite data with 93.4% accuracy;
- Conference paper SIAM/SDM2023 "*Spatiotemporal Classification with limited labels using Constrained Clustering for large datasets"* (Accepted)

Machine Learning Research Assistant, Synspot
Advisor: Prof. Jie Ding Jan. 2022 – Present
- Currently working as algorithm package development leader in Prof. Ding's Group;
- Enhanced Federated Learning collaboration and prediction through the analysis of time series and price prediction for 690K records collected from the Uber and Lyft cab prices datasets;
- Developed the python package: Colda for Federated Learning framework: HeteroFL, implemented the entire pooling and the task schedule mechanisms and improved allocation efficiency for large-scale distributed training mechanisms.

COVID-19 Forecast of Daily Infection in the US Based on Deep Learning Apr. 2020 – Sept. 2020
Advisor: Prof. Pradeep Ravikumar, Machine Learning Department, Carnegie Mellon University
- Utilized Bidirectional long-short term memory (Bi-LSTM), Gated recurrent unit (GRU) and Recurrent Neural Network (RNN) to provide the comparison analysis of the best prediction accuracy;
- Analyzed 7055 data from Jan. 21, 2020 to Jul. 8, 2020 in the US, including daily new confirmed and death track, ICU occupancy and recovery by region, followed by an exploratory analysis of the impact of the epidemic on life expectancy in the US and the future trends in epidemic infection;
- Implemented a daily web panel of outbreak updates using visualization tools such as ChartJS and D3JS.

COURSE PROJECTS

Distributed Apache Thrift RPC Framework **Minneapolis, MN**
Instructor: Prof. Abhishek Chandra CSCI5105 Intro to Distributed Systems, Spring 2022
- Implemented a distributed remote procedure call computation framework which receives jobs from a

client, splits a job into multiple tasks, and assigns tasks to compute nodes which perform computations;
- Finished the image processing functioning by using the python package OpenCV, and implemented the color revert, Gaussian Blur, and Canny edge detection;
- Set the initial extendable framework that can be used in any task progressing, and processed the analysis comparing with the ordinary image process, tested over 10,000 images, and verified the performance.

VueJS Code Snippets (website) **Minneapolis, MN**

Instructor: Daniel Kluver CSCI5117 Developing the Interactive Web, Spring 2022

- Created a website which focuses on keeping notes for code online, VueJS as the front-end and google firebase as the back-end;
- Utilized the Monaco Editor as the baseline to create a self-oriented personal code keeper editor;
- Implemented the functioning for the Progressive Web App which works for the mobile phone and application installation, and functionated the search algorithm interacting with the firebase using python, made the global search work within the website.

Simple Compiler for Procedural Language **Selangor, Malaysia**

Instructor: Mohammed Y.T.Alswaitti CST302 Compiler Principle, Fall 2020

- Implemented a full functioning simple compiler for procedural language using Lexical Analyzer Generator (Lex) and YACC;
- Systematically analyzed the advanced calculation rules and finished the regular expressions and corresponding fragments;
- Optimized the compiler functioning of Unix system, and performed the clarity of the rules.

INTERNSHIP EXPERIENCES

Agricultural Bank of China Yunnan Branch **Kunming, China**

Data Analyst Intern of the Department of Technology and Product Management Jun 2021 – Aug. 2021

- Collected the name information of bank branches from email sources, and used regular expressions in Python to remove html tags from sensitive text;
- Extracted ID numbers and cell phone numbers from the text content to realize data processing and case study of 114K emails that leaked confidential information;
- Participated in an online merchant risk management project: used Java to developed a program associating similar data with merchant information tables, accounts tables, and account transaction flow tables, and screened out potential high-risk merchant accounts.

Tianping Hotel **Suzhou, China**

Back-End Developer Internship, Information Technology Center Jun. 2020 – Jul. 2020

- Developed in the real-time hotel vacancy monitoring system with java based microservice architecture;
- Finished the backup of MySQL database and optimized cost-based queries performance;
- Reviewed and reproduced production SQL databases and set up development environment for the team;
- Conducted rigorous testing on User Interface, Database, and API calls under different platforms.

LEADERSHIP EXPERIENCE

- Product Manager in 2020 Internet innovation and Entrepreneurship Competition
- Associate Leader of 2019 Kuala Lumpur Marathon Volunteers

COMPUTER SKILLS

- Programming language: Python (proficient), OCaml (proficient), C (proficient), JavaScript (proficient) Java (intermediate), HTML (advanced beginner), CSS (advanced beginner)
- Big data skills: Hadoop (advanced beginner), Hive (advanced beginner), Spark (advanced beginner)