Tianze Zheng

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Education

University of Pennsylvania **Philadelphia, PA**
Master of Science in Engineering in Computer and Information Science | ***GPA**: 3.8/4.0* *May 2023*
Coursework: Algorithm, Machine Learning, Internet and Web Systems, Computer Graphics, Natural Language Processing

University of Notre Dame **Notre Dame, IN**
Bachelor of Science in Computer Science | ***GPA**: 3.7/4.0* | ***Awards**: Dean's List* *May 2021*
Coursework: Data Structure, Operating System, Computer Network, Open Source Development, Database System

Technical Skills

Languages: Python, C++, Java, JavaScript, CSS, HTML, C, Shell Script
Framework/Library: ReactJS, NodeJS, Bootstrap, Django, Flask, Hadoop, Redux, ExpressJS
Database: MongoDB, mySQL, DynamoDB, PostgreSQL
Tools: Git, Linux, RESTful, Maven, Amazon AWS, Postman, Google Cloud

Projects

Mini-Google, Distributed Web Search Engine **Philadelphia, PA**
Java, JavaScript, StormLite, MapReduce *Mar 2022 - May 2022*
- Integrated a distributed web indexer and crawler with a user interface, using distributed StormLite and MapReduce.
- Implemented the search engine by querying from the DynamoDB and calculating weighted results based on the inverted index, PageRank, and title of the web page to retrieve the best search results and deployed the search engine on AWS EC2.
- Utilized React and Route Handlers in the Spark Framework to display the search result on a Web User Interface.
- Speeded up information retrieval by 40x comparing to single retrieval using batch-get methods.

Mini-Minecraft **Philadelphia, PA**
C++, Qt Creator, OpenGL, Multi-threading *Feb 2022 - Apr 2022*
- Led the design of an interactive 3D world exploration and alteration program in the Minecraft style with OpenGL library, demonstrating excellent project management skills.
- Implemented Game Engine and Player Physics with the camera model, grid marching, ray casting, and player inputs.
- Enabled multi-threaded terrain generation that smoothens the gameplay using QThread, QMutex, and QRunnable.
- Designed a new user interface in QT Designer for the inventory system so players can collect and destroy blocks.
- Tracked the position of the sun using fragments and vertex shaders running on GPUs to create day and night cycles.

Two-Stage Text Summarization with Pretrained Transformers **Philadelphia, PA**
Python, Natural Language Processing *Oct 2021 - Dec 2021*
- Pioneered and designed a 2-stage summarization model to take advantage of both summarization approaches with the extractive model filters out the off-topic sentences and abstractive model capturing human-paraphrasing, applying robust research skills.
- Incorporated BERTSumEXT into a binary classifier and fine-tuned BART and GPT-2 from HuggingFace with BPE tokenizer.
- Managed the 2-stage pipeline, which significantly outperformed all single models on all ROUGH metrics.

Work Experience

ProDream Education, Harvard Innovation Lab **Boston, MA**
Machine Learning Summer Intern *Jul 2022 - Present*
- Design and build content-based recommender systems with NLP methods and deploy the model on Heroku using Flask.
- Improve the performance of the platform with 1.4x prediction accuracy increase and help international students match with consulting services and educational resources.

University of Notre Dame Student Government **Notre Dame, IN**
Web Application Developer *Jul 2019 - Mar 2020*
- Developed and maintained NDcarpool web app which arranges transportation to and from the airport for ND students.
- Programmed a front-end web page using JavaScript and Bootstrap, implemented back-end matching algorithms using Django and MySQL, and announced the web app campus-wide, which led to 1000+ pre-registrations.

China Securities Regulatory Commission **Beijing, China**
Data Scientist Summer Intern *Jun 2019 - Aug 2019*
- Initiated and implemented an algorithm to monitor the stock market's trading network, gathered data from Teradata, and calculated capital flows among stockholders based on Volume Weighted Average Price, improving operational efficiency by 120%.
- Achieved a 95% validation accuracy on the science and technology innovation board.