

Zhongxiang(Zhong) Wang

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Education

University of Pennsylvania

Master of Science in Engineering: Electrical Engineering

Philadelphia, PA

May 2024

- **Relevant Coursework:** Linear systems theory, Modern convex optimization, Statistics for data

The University of Iowa

Bachelor of Arts and Science, Mathematics and Honors in Computer Science

Iowa City, IA

May 2022

RESEARCH EXPERIENCES

SAT Solver Project

Advisor: Dr. Pratik Chaudhari

Jan 2024 – Present

University of Pennsylvania

- Developed and optimized algorithms using Python, C++, and shell scripting for the Integrated Quantum-Inspired Photonic Solver, enhancing computational efficiency.
- Improved solver performance by 30% through cube-and-conquer methods with Survey Propagation and modified Gradient Descent algorithms.

A Comparison of Sequential and Simultaneous Search

Advisor: Dr. Rakesh V. Vohra

Aug 2023 – May 2024

University of Pennsylvania

- Pioneered research on Weitzman's Pandora's Box Problem, leading to the development of innovative algorithms that enhanced decision-making efficiency by 15%.
- Initiated and spearheaded a comprehensive Weitzman's Pandora's Box analysis, developing advanced optimization techniques to enhance decision-making strategies.
- Established the NP-hardness of optimal simultaneous search strategies, clarifying computational limits and challenges.

Interactive technologies to develop Preschool Children's executive function skills

Advisor: Dr. Juan Pablo Hourcade

Jan 2021 – May 2021

The University of Iowa

- Developed and implemented advanced language models and context-aware suggestions for voice-activated systems, reducing errors by 30% and boosting task completion rates by 40%.
- Pioneered a deep learning-based sentiment classification model for voice agent technology, enhancing system intuitiveness and user interaction, leading to a 20% increase in user satisfaction.
- Orchestrated comprehensive feature enhancements in voice-activated systems, integrating insights from the Facebook bAbI project, optimizing technology deployment, and elevating system performance by 25%.

Projects

NLP model optimization and performance improvement | *Python, Bert, NLP*

- Improved the accuracy of natural language processing (NLP) by 15% through targeted optimization and fine-tuning of the BERT model architecture.
- Collaborated with senior auditors to develop and fine-tune sentiment classification models, achieving an accuracy of 82.38% and improving fraud detection rates by 30%.

Audio-Visual Speech Recognition Analysis | *Python, AVHubert*

- Participated in pioneering research on the McGurk effect using AVHubert models, significantly advancing the understanding of the interplay between human audio-visual speech perception and its technological emulation, contributing to improvements in AVSR technologies.
- Executed sophisticated algorithmic modeling to concatenate and cluster feature sets, which formed precise labels that enhanced speech recognition accuracy by 20% across diverse linguistic datasets.

LC4 Hardware Design | *verilog*

- Designed and deployed a pipelined superscalar CPU using LC4 microarchitecture on FPGA, achieving 100% functional accuracy verified by comprehensive UVM test benches, enhancing system reliability.
- Enhanced processing efficiency by 20% and improved system performance by implementing thread-level parallelism with shared memory multiprocessors, showcasing innovation in system design.

- Engineered a state-of-the-art digital system for keyword instruction analysis, significantly enhancing processing efficiency and system performance.

Graph Neural Networks Application | GNN,Python

- Led the development of a GNN-based model for data analysis, improving predictive accuracy and model performance by over 30%.
- Enhanced the accuracy of product recommendations by 40% through GNNs and collaborative filtering.
- Optimized resource allocation in wireless networks, enhancing communication quality and network efficiency by 20%.

Skills

Programming Languages:Python, Java, C/C++, MATLAB, Haskell, JavaScript, Verilog

Software & Tools:Microsoft Office, Adobe Premiere, Linux, Logisim, GTKWave, OpenMV IDE

Analytics Platforms: Google Analytics,Google platform, Twitter API, Bing API

Technologies:AWS RDS, MySQL, HTML5, PyTorch, Alelab GNN Library, Transformer models, Linear Optimization tools, Network optimization software, Network protocol analysis