Vincent **Cai**

Iowa City, IA | (319)800-1492 | hongwei-cai@uiowa.edu
hongweicai.com | hongwei-cai | hongwei-cai

EXPERIENCE

Casey's | Scrum, C#/.NET, SQL, Azure DevOps, Restful API
Software Engineering Intern | May – Aug 2024, Ankeny, IA

- Actively participated in Scrum ceremonies, developing effective communication and fostering teamwork throughout the software development lifecycle
- Solely responsible for the tech debt project of upgrading all Commerce Integration Platform applications to .NET 8, enhancing the CI/CD pipeline's efficiency and reliability
- Supported various IT initiatives, including server optimizations and network security, contributing to system improvements

UIowa | Haskell, Agda, C, Bash, Assembly language, X86
Teaching Assistant | Department of Computer Science | Jan 2023 – current, Iowa City, IA

CS:3820 Programming Language Concept

- Supported instruction in the functional programming language Haskell and programming proofs using Agda
- Established open communication via office hours, email, and resolved issues in collaboration with fellow TA

CS:2630 Computer Organization

- Instructed two cohorts of 20 students during 75-minute classroom sessions in a supportive learning environment
- Assistant in teaching C programming, Bash, assembly language programing, X86 ISA, memory management, and CPU pipelining

MACHINE LEARNING PROJECTS

Cross-Modality MRI Synthesis with CycleGANs May 2024
Project for ECE:5995 Applied Machine Learning

- Replicated a CycleGAN model to translate between MRI modalities (T1 to T2), enhancing diagnostic imaging without additional scans
- Implemented advanced deep learning techniques including PatchGAN discriminators and residual-based generators for robust image transformation
- Integrated Adam optimizers with exponential decay schedulers to optimize GAN training, ensuring stable and efficient model convergence

Enhancing Image Super-Resolution Using EDSR April 2024
Mid-term Project for ECE:5995 Applied Machine Learning

- Replicated the Enhanced Deep Super Resolution (EDSR) model, leveraging its deep network architecture with optimized residual blocks to benchmark against traditional methods like SRCNN and SRResNet for superior image resolution
- Employed a single-scale EDSR model with a modular block-based design, using convolutional and upsampling layers to transform low-resolution images into high-resolution outputs, enhancing visual clarity and detail

SKILLS

Languages: Python/Django, C#/.NET, JavaScript, HTML5/CSS3, SQL

Libraries: PyTorch, Scikit-Learn, NumPy, Pandas, Matplotlib

Miscellaneous: Machine Learning, Version control, Amazon AWS, Microsoft Azure

EDUCATION

UNIVERSITY OF IOWA
Master's, Computer Science
Anticipated May 2025 | Iowa City, IA
GPA: 3.87/4.00

Ph.D., Composition
Dec 2023 | Iowa City, IA

HONORS & AWARDS

Marcus Bach Graduate Fellowship
Dissertation awards | 2023 | UIowa

Graduate College Summer Fellowship
For summer research | 2021 | UIowa

Henry and Parker Pelzer Fellowship Award (×2)
Composer of the year | 2017 & 2019 | UIowa

COURSEWORK

Data Structures, Algorithms, Computer Organization, Programming Language Concept, Operating Systems, Applied Machine Learning, Theory of Computation, Designing Systems and Algorithms for Biomedicine

INTERESTS

Group Fitness (Les Miles BODYPUMP & BODYCOMBAT, HIIT, Power Yoga), Swimming, Piano, Music Composition, Self-improvement