

Vincent Cai

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EXPERIENCE

Iowa | Java, Haskell, Agda, C, Bash, Assembly language, X86

Teaching Assistant | CS department | Iowa City, IA Jan 2023 – current

CS:2230 Data Structures

- Led weekly discussion sessions teaching Java programming, guiding students in algorithm analysis for time and space complexity, and data structures selection for various tasks
- Supported students in implementing data structures, understanding their operations, and applying object-oriented programming (OOP) principles

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 programming, X86 Instruction Set Architecture (ISA), memory management, and CPU pipelining

Casey's | Scrum, C#/.NET, SQL, Microsoft Azure, Azure DevOps

Software Engineering Intern | Ankeny, IA May – Aug 2024

- Actively participated in Scrum ceremonies, developing effective communication and fostering teamwork throughout the software development lifecycle (SDLC)
- 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 documenting server vulnerabilities, decommissioning unused applications, removing EWS firewall rules, and contributing to system improvements

MACHINE LEARNING PROJECTS

VocalWave – Automatic Speech Recognition (ASR) System in Progress

Python, NumPy, Kaldi, JSON

- Completed: Implemented a data processing pipeline for ASR system, utilizing Kaldi library for feature extraction, NumPy for matrix manipulation, and custom functions for splicing and subsampling of audio features

Cross-Modality MRI Synthesis with CycleGANs

May 2024

Google Colab, PyTorch, NumPy, Pandas, Matplotlib, MONAI

- Replicated a 2D CycleGAN model to translate between MRI modalities (T1&T2) using Vestibular-Schwannoma-SEG dataset
- 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

TECHNICAL SKILLS

Languages: Python, Java, C++, C#/.NET, JavaScript, HTML5/CSS3

DS/ML Libraries & Frameworks: PyTorch, Scikit-Learn, NumPy, Pandas, Matplotlib, Seaborn

Databases: MySQL, PostgreSQL, Microsoft SQL, MongoDB

Tools & Technologies: Jira, New Relic, Confluence, ServiceNow, Microsoft Azure, Azure DevOps, Git, Docker, HPC

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

COURSEWORK

Machine Learning | Applied Machine Learning
Mathematics of Machine Learning
Artificial Intelligence | Theory of Computation
Operating Systems | Database Systems
Design and Implementation of Algorithms
Designing Systems and Algorithms for Biomedicine

HONORS & AWARDS

Marcus Bach Graduate Fellowship

Dissertation awards | 2023 | Ulowa

Graduate College Summer Fellowship

For summer research | 2021 | Ulowa

Henry and Parker Pelzer Fellowship Award (x2)

Composer of the year | 2017 & 2019 | Ulowa

STRENGTHS

Teamwork & Collaboration | Strong Presentation & Communication Skills (Written & Oral) | Problem-Solving & Critical Thinking | Self-Motivated & Proactive | Hardworking & Committed to High Ethical Standards

LANGUAGES

English: Full Professional Proficiency

Mandarin Chinese: Native

INTERESTS

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