Kevin Xiang Li

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Education

University of Michigan, Ann Arbor, MI 2020 – May 2024 (Expected)

- Major: Computer Science, Minor: Linguistics
- GPA: 3.85/4.0
- Honors: James B. Angell Scholar (5 consecutive terms of all A's), Class of 1935 Engineering Scholarship ($2000 for the 2023-2024 academic year)
- Course Highlights: Programming Languages, Compiler Construction, Intro to Operating Systems, Intro to Machine Learning, Intro to Natural Language Processing, Computer Vision, Computer Security, Automotive User Interfaces, Extended Reality & Society

Experience

Researcher Oct 2021 – present

Future of Programming Lab, University of Michigan, U.S.A

- Improve if expressions & tuple completions in Hazel, a live programming environment with typed holes.
- Systemize polymorphism with type aliases, for all types, and type functions backed by De Bruijn index.
- Achieve promising experimental results on integrating LLM with Hazel for contextualized code completion.
- Contributed a pull request to llama.cpp, a popular LLM inference library, to fix a grammar sampling bug for models like Code Llama that use the SentencePiece tokenizer.

Researcher April 2022 – Aug 2023

Michigan Intelligent Programming Lab, University of Michigan, U.S.A

- Proposed a novel program synthesis algorithm called lifted interpretation that lifts up the program interpretation process, from evaluating one program at a time to simultaneously evaluating all programs.
- Outperformed previous state-of-the-art web automation technique by 6x & solved 2.5x more benchmarks.
- Optimized Rust implementation using techniques such as incremental computation, interning, and caching.
- Presented first-author research in London at the 51st ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2024)

Efficient Bottom-Up Synthesis for Programs with Local Variables
Li, Xiang*, Xiangyu Zhou*, Rui Dong, Yihong Zhang, and Xinyu Wang
Proc. ACM Program. Lang, Issue: POPL 2024

Projects

Mobile App Developer Oct 2021 – present

Hong Kong Lexicography Limited, Remote Work

- Designed and implemented a cross-platform Cantonese dictionary app using Flutter.
- Built a custom search engine in Rust for more than 15,000 bilingual dictionary entries, automatically detecting user query types including Chinese characters, English, and Cantonese romanization.
- Managed search history and bookmarks with on-device SQLite databases for fast retrieval.
- Set up privacy-preserving analytics using AWS DynamoDB to track usage patterns and improve service.
- Gained 8.7K installs on iOS app store & 3.7K installs on Android play store, localized to 4 languages.

AR Game Developer Feb 2024 – present

EECS 498 Extended Reality & Society

- Developing an AR educational and athletics game called A2-GO using Unity, inspired by Pokémon GO.
- Implementing an exploration mode powered by Mapbox where players can navigate and discover landmarks around Ann Arbor while planting trees.
- Integrating an AR view with a cursor on the ground for players to plant trees and protect trees from attacking squirrels by throwing acorns at them.

VR App Developer Jan 2024 – Feb 2024

EECS 498 Extended Reality & Society

- Developed a virtual reality simulator of a Michigan CSE student's life using Unreal Engine 5, featuring

detailed recreations of iconic locations on campus.
- Implemented interactive elements such as whiteboards, fire alarms, wall fliers, copy machines, and NPCs to enhance user engagement and realism.
- Integrated a unique gameplay mechanic with the objective to maximize the player's TikTok binge while expertly dodging the professor's laser-like gaze.
- Practiced Agile development using JIRA to coordinate work with teammate and deliver project milestones on time.

Kernel Developer Oct 2023 – Nov 2023

EECS 482 Intro to Operating Systems

- Led a team of 3 in designing a sophisticated memory manager for swap and file-backed pages.
- Designed a file server that handles multiple requests in parallel with high efficiency.
- Constructed a thread library using low-level interrupts, supporting conditional variables and mutexes.
- Developed a comprehensive suite of unit tests and randomized tests to detect and fix all edge cases.
- Addressed challenging software complexities in C++ to fulfill intricate project specification.

Input Method Developer Oct 2022 – Jun 2023

Personal project

- Crafted the first learner-centered macOS input method for Korean learners in Swift.
- Handwrote intricate text processing logic to compose Korean characters from the Latin alphabet.
- Ease the learning curve for users by supporting lookup of Korean words using English.

Web App Developer Apr 2020 – Jan 2022

Personal project

- Developed an electric field simulator & art creator, integrating physics principles with digital art creation.
- Utilized typed, declarative interfaces provided by Elm libraries for browser interactions & UI, improving correctness and readability of the implementation.
- Enhanced performance with dynamic quality adjustments for electric field lines outside render region.

Skills

Mobile App Dev • VR/AR App Dev • Web Dev • Natural Language Processing • UI/UX Design
Programming languages: Rust, C++, Python, Dart, Swift, Elm, TypeScript, JavaScript, Java
Technologies: Flutter, Docker, AWS, PyTorch, SQLite, Git, JIRA, Unreal Engine, Unity, Figma
Languages: bilingual in English and Mandarin, proficient in Cantonese