

# Kevin Y. Zhang

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## EDUCATION

### University of Illinois Urbana-Champaign

Champaign-Urbana, IL

*Bachelor of Science in Computer Science, Chancellor's Scholar*

*August 2023 – December 2026*

**Relevant Coursework:** Data Structures and Algorithms, Computer Architecture, System Programming, Introduction to Algorithms and Models of Computation, Database Systems, Probability and Statistics, Combinatorics, Distributed Systems, Machine Learning, Social and Information Networks

## EXPERIENCE

### Software Development Intern

June 2024 – August 2024

*Clarity Partners*

*Chicago, IL*

- Delivered production full-stack web applications and internal services for multiple client engagements
- Redesigned a client user-search web application in ASP.NET Core MVC (.NET), improving maintainability and increasing SQL Server query performance by 200%, introducing parameterized stored procedures, and consolidating server-side filtering
- Built an internal React admin tool for template-based bulk email campaigns used by up to 20 non-technical staff; implemented template management, message composition, delivery status tracking, and audit logging backed by SQL Server (managed via SQL Server Management Studio)

### Full-Stack Software Engineer

October 2023 – May 2024

*Geni*

*Urbana, IL*

- Developed adaptive, generative-AI writing exercises for elementary students to personalize practice and feedback; trialed with 40 students at local private school
- Translated teacher feedback into high-fidelity Figma specs for Teacher and Student dashboards, iterating on UX to streamline classroom workflows, then built in TypeScript, React, and Tailwind CSS

## PROJECTS & ACTIVITIES

### Stackd | *React, Supabase, TypeScript, WebSocket, Event Sourcing, Next.js*

June 2025 – Present

- Architected a real-time poker platform with a Node/WebSocket gateway and Next.js 14 (App Router, SSR) front end with optimistic UI and debounced real-time updates; protocol-first design using shared TypeScript types
- Implemented an event-sourced game engine (append-only log + snapshots) and a Table-Actor model for authoritative, in-memory state; enables deterministic replays, crash recovery, and fast reconnection
- Managed database migrations and schema evolution in Supabase; instrumented error handling and graceful degradation to keep tables live under transient failures

### Verified OCaml ByteCode VM | *OCaml, dune/opam, QCheck, Alcotest, Core\_bench*

September 2025 – Present

- Built a stack-based VM with an independent spec interpreter and static bytecode verifier; used property-based differential testing to prove  $\text{spec} \equiv \text{VM}$ , determinism, and safety across thousands of well-typed programs
- Engineered performance with an array-backed stack and tight opcode dispatch; Core\_bench microbenchmarks show clear speedups over the spec interpreter
- Authored small-step semantics and implemented structured control-flow/stack-height checks; shipped a reproducible dune/opam workspace with CI-ready tests

### GTO Illini | *Vice President, Development Lead, Social Media Manager*

September 2024 – Present

- Co-founded the largest poker RSO (300 members) focused on the game theory and strategy of Texas Hold'em

### Agri | *Next.js, React, MySQL, JOSE*

February 2025 – May 2025

- Built a full-stack SSR Next.js app for Database Systems Final Project to track the environmental cost of grocery items with a reusable React/Tailwind UI and interactive Leaflet maps
- Designed MySQL schema and Next.js API endpoints for auth (JOSE), profiles, grocery lists, and location queries

## TECHNICAL SKILLS

**Languages:** Java, Python, C, C#, C++, Go, JavaScript, TypeScript, SQL (PostgreSQL, SQL Server)

**Frameworks:** React, Next.js, Node.js, Electron.js, ASP.NET Core (.NET), Tailwind CSS

**Tools:** Git, Docker, Google Cloud Platform, Supabase, Firebase, MongoDB

**Libraries:** pandas, NumPy, Matplotlib