

# Harsh Desai

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## EDUCATION

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### University of Illinois Chicago *Expected May 2027*

B.S. Computer Science

Relevant Coursework: Data Structures, Discrete Math, Differential Equations, Linear Algebra, Languages & Automata, Machine Organization, Computer Design, Programming with C/C++

## TECHNICAL SKILLS

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**Languages:** Python, Java, C++, C, JavaScript, HTML/CSS, Swift, SQL, Lua, C#, Qiskit

**Frameworks & Tools:** React, Next.js, Spring Boot, MongoDB, Git/GitHub, Jupyter Notebook, Qbraid, XCode, Unity, IntelliJ, VS Code

## EXPERIENCE

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### Quantum Algorithms Researcher | University of Illinois Chicago *Aug 2025 – Mar 2026*

- Improved simulation efficiency by investigating Jordan-Wigner vs. Bravyi-Kitaev transformations, targeting reduced circuit complexity while maintaining equivalent time-control accuracy.
- Designed experimental frameworks in Qiskit to benchmark qubit mapping approaches across multi-qubit quantum systems.

### Quantum Software Development Intern (GPIP) | University of Illinois Chicago *Summer 2025*

- Increased measurement accuracy by 100% across variable configurations by building Python scripts to compute expectation values for Quantum Harmonic Oscillators and multi-qubit systems.
- Analyzed behavioral shifts in Quantum Harmonic Oscillators under both incremental and drastic variable changes, producing reproducible experimental results.

### Lead Coding Instructor (Sensei) | Code Ninjas, Long Grove *2022 – 2024*

- Mentored 50+ students in coding, debugging, and game development using Lua and JavaScript, increasing student project completion rates.
- Led a team of instructors by establishing collaborative decision-making processes, improving team cohesion and lesson consistency across sessions.

## PROJECTS

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### CountingCards | HTML, CSS, JS, Bootstrap *Feb 2026*

- Increased study engagement by introducing a gamified card-based learning system, measured through interactive session tracking and dynamic card cycling, by building a responsive frontend using JavaScript logic and Bootstrap UI components.

### CurtainCall | Next.js, React, Spring Boot, MongoDB *Feb 2026*

- Enabled artist discovery and networking by building a Tinder-style swipe matching system, supporting scalable user connections and endorsements, by developing RESTful APIs with Spring Boot and storing relational user data in MongoDB.
- Improved platform scalability and performance by designing efficient backend schemas and API endpoints, reducing redundant database calls, by structuring MongoDB collections around user relationships and endorsement logic.

### SnapLink | React, Spring Boot, MongoDB, Google Maps API *Feb 2025*

- Connected small businesses with local job-seekers in real time by building a geo-tagged task discovery system, improving localized opportunity visibility, by integrating the Google Maps API with dynamic geolocation filtering.

### Lucky D's Gaming Cafe Website | React, WebStorm *June 2022*

- Increased in-person customer engagement by launching a production-ready business website, enabling users to explore events and services before visiting, by independently designing and deploying a React-based site.

## AWARDS & LEADERSHIP

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- **IBM Quantum Badge of Excellence** – Completed all labs in the Qiskit Global Summer School 2025 with 100% accuracy.
- **Freshman Mentor Program** – Selected as 1 of 100 mentors from a pool of 2,000 applicants; recognized as one of the program's top mentors by program leadership.
- **IEEE Executive Board** – Web development board member collaborating with a known student organization in which I generate ideas to update and reimagine the IEEE website for UIC.