

# Abbinash Ranjitkar

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## EDUCATION

### University of Alberta

Edmonton, AB

*Bachelor of Science in Computing Science with a Specialization in Software Practice*

*Sep. 2022 – May 2026*

- GPA: 4.0/4.0
- Awards: Dean's List, Louise McKinney Scholarship (2022–2024); NSERC Undergraduate Research Award (2024)
- Relevant coursework: Software Engineering, Database Management, Algorithms I–II, Computer Architecture I

## EXPERIENCE

### Undergraduate Research Assistant

May 2024 - Sep. 2024

*University of Alberta*

*Edmonton, AB*

- Designed and implemented local search and greedy algorithms for approximation problems, enhancing understanding of algorithmic design and efficiency.
- Conducted rigorous mathematical analysis to evaluate and improve the competitive ratio of developed approximation algorithms, enhancing their efficiency and theoretical foundations.
- Developed and tested various instances to establish lower bounds on the competitive ratio, providing deeper insights into algorithmic performance limits.
- Collaborated with a research team to refine algorithmic approaches, resulting in optimized solutions and improved theoretical foundations.

## CONFERENCE SUBMISSIONS

Mingyang Gong, Guohui Lin, Eiji Miyano, and **Abbinash Ranjitkar**. "Covering vertices by  $4^+$ -paths: A simpler local search coupled with a more delicate amortization." Submitted to the Symposium on the Theoretical Aspects of Computing Science 2025, Track A, Manuscript #77, Under Review.

## PROJECTS

### HyperLinker | *JavaScript, React.js, MongoDB, Docker, Socket.io, AWS*

Aug 2024 – Present

- Developed a Chromium-based browser extension using **JavaScript** and **React.js** to allow users to play the "Wikipedia Game" in single-player and multiplayer modes.
- Implemented real-time multiplayer functionality with **Socket.io** over WebSockets for seamless user interactions.
- Built a backend system using **MongoDB** for storing user data and game statistics, implementing user authentication with OAuth.
- Containerized backend services with **Docker** and deployed them on **AWS ECS** for scalable infrastructure.

### Checked In | *Android Studio, Java, Firebase, Gradle, XML, JUnit, GitHub CI/CD*

Jan 2024 – April 2024

- Developed an Android application using **Java** and **Android Studio** to support event management with QR code generation and scanning, geo-location, and photo/video features.
- Utilized **Firebase Firestore** for user authentication and data storage, ensuring secure and efficient data handling.
- Designed intuitive user interfaces, leveraging **XML** for layout structure and **Figma** for visual design.
- Implemented testing frameworks with **JUnit** and configured **GitHub CI/CD** pipelines.
- Led a team of 6 developers as **Scrum Master**, coordinating sprints and facilitating agile methodologies to enhance team efficiency and project outcomes.

## TECHNICAL SKILLS

**Programming Languages:** JavaScript, TypeScript, Python, Java, C, C++, bash, Assembly

**Web Frameworks and Libraries:** React, Node.js, Vite, TailwindCSS, Next.js, Express.js, Socket.io

**Databases:** MongoDB, SQL (PostgreSQL, SQLite), Firebase

**DevOps and Cloud Technologies:** Docker, AWS, Google Cloud Platform

**Tools and Testing:** Figma, GitHub, Android Studio, JUnit, Gradle, GDB, Valgrind

**Related coursework:** Software Engineering, Database Management, Algorithms I–II, Computer Architecture I