

# ADRITA AFSARA KHAN

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## SUMMARY

Full-stack software developer and Computer Science graduate (Toronto Metropolitan University, 2026) who ships production-style web applications end to end across the Java, Python, and JavaScript stacks. Builds REST APIs and back ends with Spring Boot, Django, and Node/Express, front ends with React and Next.js, and relational and NoSQL data layers, then ships them to the cloud with Docker and CI. Experienced with real-time systems (WebRTC), concurrency-safe transactions, multi-tenant architecture, authentication, and automated testing. Seeking software engineering and full-stack developer roles.

## TECHNICAL SKILLS

**Languages:** Java, Python, JavaScript, TypeScript, SQL, HTML/CSS, C, Bash, PHP (coursework: Rust, Haskell, Elixir, Prolog, Assembly)

**Frameworks & Libraries:** Spring Boot, Spring Security, Spring Data JPA, React, Next.js, Node.js, Express, Django, Tailwind CSS, LiveKit

**Databases:** PostgreSQL, MySQL, MongoDB, Firebase

**Cloud & DevOps:** Docker, GitHub Actions (CI/CD), AWS (SES), Render, Vercel, Cloudinary

**Testing & Practices:** JUnit 5, Testcontainers, unit & integration testing, REST APIs, token-based auth, Git/GitHub, Flyway migrations, Agile

**Tools & Spoken:** Linux (Ubuntu), VS Code, Wireshark, VMware • English, French, Bengali

## PROJECTS

**Book Canada** • Concurrency-Safe Hotel Booking System In Progress • 2026

[Live Demo](#) • [Code](#) Java 21, Spring Boot 3, Spring Security, Spring Data JPA, PostgreSQL, Flyway, JUnit 5, Testcontainers, Docker, GitHub Actions

- Built and deployed a live hotel reservation platform (six Canadian destinations, hotel listings, auth-gated checkout) on a Java 21 / Spring Boot REST API, containerized with Docker and tested on GitHub Actions CI.
- Guaranteed the system never overbooks under load by modelling per-night inventory and enforcing JPA optimistic locking with a read-and-retry loop, so concurrent requests for the last room resolve to a single winner.
- Reserved multi-night stays atomically with all-or-nothing rollback, and separated retryable write collisions from genuine sold-out rejections (HTTP 409) for correct behaviour under contention.
- Verified it with a Testcontainers integration test that fires 60 concurrent threads at a 5-room night and asserts exactly five reservations commit; covered rollback and validation paths with JUnit 5.

**SynqSpace** • Real-Time Virtual Classroom 2026

[Live Demo](#) Next.js (App Router), TypeScript, React, LiveKit, Excalidraw, Tailwind CSS

- Built a browser-based one-on-one tutoring platform with live video/audio and a shared, real-time collaborative whiteboard that lets tutor and student draw together in the same session.
- Engineered whiteboard sync over LiveKit (WebRTC) data channels using delta updates and version-based conflict reconciliation, with chunked binary transfer for sharing images and PDF pages onto the board.
- Implemented server-side, role-based access control: a token API mints per-role LiveKit JWTs (teacher gets moderation rights, student does not) so credentials never reach the browser, plus a teacher-controlled draw-permission toggle and a mobile-responsive layout.

**Kumon Check-In / Check-Out System** • Multi-Tenant Attendance App 2026

[Demo Video](#) Python, Django, MySQL, django-q2, Amazon SES, django-simple-history

- Built a multi-tenant attendance system for two learning centres and 200+ student records, where students check in and out by scanning a barcode at a front-desk board that updates automatically as scans happen.
- Added a colour-coded countdown board (on-track, 15-minute warning, overdue) and an instant parent email on check-out, queued through a background worker so a scan never blocks on email delivery.
- Enforced per-tenant data isolation via a custom query manager so each owner sees only their own centres, and added timezone-aware streamed CSV export plus an append-only audit trail for a tamper-evident record.

**Picture Gallery** • Full-Stack MERN App 2026

[Repo](#) React, Node.js, Express, MongoDB, Cloudinary, Vercel, Render

- Built and deployed a full-stack image gallery with token-based authentication and full CRUD, across a three-tier cloud setup (frontend on Vercel, backend on Render, database on MongoDB Atlas) with images persisted on Cloudinary.

## EDUCATION

**Honours B.Sc., Computer Science** • Toronto Metropolitan University, Toronto, ON 2022–2026

**Honours B.Sc. with Distinction, Life Sciences** • University of Toronto Mississauga 2016–2021

Double Major: Biology for Health Sciences and French Studies. U of T Scholar; Lieutenant Governor's Award (600+ volunteer hours).

## EXPERIENCE

**Primary Instructor** • Kumon Math & Reading, Mississauga, ON 2016–Present

- Break down complex concepts into clear, structured steps for learners at all levels, and track progress with data to target improvement.

**Software Engineering Fellow** • Headstarter AI (Remote) 2024

- Selected for an intensive, project-based fellowship in full-stack web development (React, Next.js); shipped weekly build sprints under deadline.

**Owner** • Afsara's Elegant Jewellery 2020–Present

- Run an online business end to end: e-commerce, social marketing (Instagram, Facebook), product listings, customer communication, and fulfillment.

## LEADERSHIP & RESEARCH

Vice President, Boss Women Club • Mentor, Erindale Biology Society • Coordinator, UTM Helping Hands • Volunteer, Opportunity Exchange IT Career Summit (2017–2026).

Research Student, U of T Mississauga (2019–2020): co-designed a research study and authored a cross-disciplinary literature review.