ARUNA SENTHAMARAIKANNAN

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Front-end engineer passionate about crafting intuitive, accessible web applications. Proficient in Angular, React, and design systems. Strong advocate for component-driven architecture, Agile workflows, and cross-functional collaboration. Committed to delivering scalable and responsive user experiences.

EDUCATION

Northeastern University, Boston, MA — Expected 2027
Master of Science in Software Engineering Systems — CGPA: 4.0
Coursework: User Experience Design and Testing, Object-Oriented Design

Rajalakshmi Engineering College, Chennai, India — 2023
Bachelor of Engineering in Computer Science and Engineering — CGPA: 3.8
Coursework: Internet Programming, Software Engineering Concepts, DBMS

SKILLS

Languages: Java, JavaScript, TypeScript, SQL, Python
Backend Development: Spring Boot, REST API Design, JWT Tokens, Kafka, Node.js, MySQL, MongoDB
Architecture Patterns: Hexagonal Architecture, Onion Architecture, Microservices, MVC
Frontend Tools: React, Angular, Bootstrap, HTML, CSS
Testing & Tools: Postman, Insomnia, Git, Jira, Confluence, Agile Scrum, Datadog, Docker

EXPERIENCE

Graduate Research Assistant — May 2025 – Present
Northeastern University, Boston, MA
- Collaborated on auditing an AI-powered medical advising system by validating diagnostic outputs against confirmed patient records.
- Used **MongoDB** to store and manage diagnostic responses generated by LLMs, enabling structured evaluation and retrieval of patient-specific results. Analyzed model predictions and diagnostic labels to quantify accuracy and edge-case performance in clinical scenarios.
- Structured data flows and audit logic using prediction scores and medical classifications sourced from the system's database.

Graduate Research Assistant – Academic Lineage Project — Feb – May 2025
Northeastern University, Boston, MA
- Collected and curated lineage data including PhD advisor profiles for all faculty across a university-wide academic tree.
- Created wireframes in Figma and contributed to UX improvements to enhance discoverability for PhD and RA applicants.
- Built and tested responsive React.js components for browsing academic relationships and filtering faculty by research interest and lineage.

Software Engineer — Jul 2023 – Dec 2024
Trimble Inc., Chennai, India
- Designed and developed RESTful APIs using Spring Boot and Java, following Hexagonal and Onion Architecture to ensure modularity and testability. Integrated secure file upload functionality to AWS S3 buckets for vehicle documents.
- Implemented real-time communication between services using Apache Kafka, enabling asynchronous updates and increasing throughput.
- Secured endpoints using JWT tokens for authentication and authorization; validated flows with Postman.
- Reduced average API response time by **35%**, measured through Datadog dashboards and tracked via Jira regression issues.

Software Developer Intern — Jan – Jun 2023
Trimble Inc., Chennai, India
- Assisted in Angular UI development, improving layout, responsiveness, and component logic under senior developer mentorship.
- Participated in testing and debugging real-time workflows, identifying and resolving key UI bugs with measurable user impact.
- Improved accessibility in interactive elements and followed Agile practices using Bitbucket and Jira to deliver sprint stories.

PROJECTS

MBTA+ (Transit App Prototype) (Figma)
- Built a prototype mobile app for MBTA services with route planning, live arrival tracking, and tap-to-pay support.
- Created wireframes with real-time route cards and location indicators optimized for mobile users.
- Reduced user navigation steps by 25% through streamlined screen hierarchy and simplified interaction design.

Movie Bookmark Web Application (GitHub) — 2022
- Built a full-stack movie bookmarking app using React.js with TypeScript and a Spring Boot backend with RESTful endpoints.
- Implemented search and filter functionality by genre, title, and year; enabled persistent bookmarks through MySQL storage.
- Designed modular services using clean architecture principles for better code reusability and future scalability.

Recipe Management Application (GitHub)
- Built a JavaFX app with views for recipe entry, planning, and tagging, backed by MySQL for session persistence.
- Implemented input validation, dynamic dashboards, and modular UI with personalized sections for different user roles.
- Applied object-oriented design patterns to maintain clean code and improve feature extensibility.

PUBLICATIONS

Mobile Application Development of Tourist Management Using Ant-Colony Optimization Algorithm. AIP Conference Proceedings, 3175(1), 020019. DOI Link