

# Arul Agarwal

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## Education

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### Northeastern University

Boston, MA

Master of Science in Computer Science; GPA: 3.93/4.0

Jan. 2025 – Dec. 2026 (Expected)

- **Relevant Coursework:** Mobile Application Development (iOS), Programming Design Paradigms, Algorithms, Foundations of Artificial Intelligence, Natural Language Processing

### Vellore Institute of Technology

Vellore, India

Bachelor of Technology in Computer Science Engineering; CGPA: 8.08/10.0

Aug. 2017 – June 2021

## Technical Skills

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- **Languages:** Python, Java, JavaScript, TypeScript, Swift, Kotlin, C++, HTML5, CSS3, SQL, Go, Ruby
- **Mobile Development:** iOS (UIKit, SwiftUI), Android (Jetpack Compose), Kotlin Multiplatform, Compose Multiplatform, React Native, Firebase Integration
- **Web & Frameworks:** React.js, Node.js, Express.js, Flask, Ktor, Koin, Voyager, RESTful APIs
- **UI/UX & Design:** Figma, Wireframing, Prototyping, User Interface Design, Responsive Design
- **AI/ML & NLP:** TensorFlow, PyTorch, LLMs (BERT, GPT, Gemini), OpenCV, Transformers, Sentiment Analysis
- **Databases:** MySQL, SQLDelight, Database Management Systems
- **Testing & Tools:** Unit Testing, JUnit, Espresso, Jest, Automated Testing, Git, Docker, AWS, CI/CD
- **Methodologies:** Agile, Test-Driven Development, Design Patterns, Full-stack Development, Code Review

## Professional Experience

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### Northeastern University

Boston, US

Teaching Assistant

Sept. 2025 – Dec. 2025

- Teaching assistant for the graduate course CS5010 Programming Design Paradigms

### Viacom18/Disney Star India Pvt. Ltd.

Bengaluru, India

Executive - Android Developer

Aug. 2022 – Dec. 2024

- Developed Jio Cinema streaming application using Jetpack Compose serving 400M+ diverse users
- Designed Custom Compose Component Library with accessibility features, reducing development time by 25%
- Implemented comprehensive testing infrastructure maintaining 99.9% uptime in production
- While leading the component library design team, conducted code reviews and contributed to API documentation to ensure high code quality and team knowledge sharing
- Utilized Git for version control, managing branches and merges in a collaborative Agile environment

### Viacom18/Disney Star India Pvt. Ltd.

Bengaluru, India

Graduate Engineer Trainee - Android Developer

Aug. 2021 – Aug. 2022

- Collaborated with cross-functional teams using Agile methodology, achieving 100% sprint completion
- Implemented new features with comprehensive test coverage and code quality standards
- Participated in peer code reviews and maintained version control best practices using Git

## The Data Team

Frontend Developer Intern

Bengaluru, India

Feb. 2021 – Jul. 2021

- Developed React Native mobile applications with Jest testing suites for BPCL project
- Created accessible web dashboards using React.js with real-time analytics capabilities

## Projects

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### VisionLearn: CVI Accessibility App     *Kotlin, Compose Multiplatform, Gemini AI     Jan. 2026*

- Built cross-platform iOS/Android learning app for children with Cerebral Visual Impairment using Compose Multiplatform with 95%+ shared code
- Implemented MVVM + Clean Architecture with SQLDelight, Ktor, and Koin; integrated Google Gemini AI for adaptive learning content generation
- Designed accessibility-first UI with 64dp+ touch targets, TalkBack/VoiceOver support, and 5 learning modules based on Perkins CVI Protocol

### Multilingual Hate Speech Detection     *Python, PyTorch, mBERT, XLM-RoBERTa, MuRIL     Sept. 2025 – Dec. 2025*

- Conducted comparative study of multilingual transformers for zero-shot cross-lingual hate speech detection across 50K+ samples
- Achieved 0.844 F1 score with MuRIL on Hindi using few-shot learning, demonstrating 17% improvement over zero-shot baseline
- Discovered machine translation degrades detection by 20-27%; native content critical for low-resource language deployment

### StreetBeats: Live Music Discovery     *SwiftUI, Firebase, Stripe, MapKit     Sept. 2025 – Nov. 2025*

- Built iOS app connecting street performers with audiences via real-time location-based discovery and digital tipping
- Architected MVVM with Coordinator pattern, token-based design system (60+ components), and protocol-oriented services
- Integrated Stripe PaymentSheet for secure payments and Firebase for auth/Firestore with dual performer/listener flows

### Algorithm Visualization Platform     *Python, Flask, JavaScript     Aug. 2025*

- Interactive web application for visualizing pathfinding algorithms using Boston map data
- Modular architecture supporting multiple algorithm implementations with performance comparisons

### Stock Market Trend Prediction with Sentiment Analysis     *Python, TensorFlow, Pandas     Oct. 2020*

- Built predictive model combining technical analysis with NLP-based sentiment analysis of financial news to forecast stock movements, utilizing machine learning to solve complex prediction problems
- Achieved 78% prediction accuracy using ensemble methods and LSTM networks outperforming baseline by 15% and providing insights for data-driven decisions.

## Research & Leadership

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- **Publication:** “Sentiment Analysis of Financial News” – IEEE 12th International Conference on Computational Intelligence (2020)
- **Community Impact:** COVID-19 Relief coordinator for 500+ families; Programming instructor for underprivileged students
- **Leadership:** Vice-Chairman, Institution of Engineers (India), VIT Chapter (2019-2020)
- **Languages:** English (Fluent), Hindi (Native), French (B2 Intermediate)