Baalavignesh Arunachalam (He/him)

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EDUCATION

George Mason University   Virginia, United States
Master of Science in Computer Science GPA: 3.78   August 2024 - Expected May 2026

PSG College of Technology   Coimbatore, India
5 years integrated Master of Science in Software Systems   June 2018 - May 2023

SKILLS

Programming Languages: TypeScript, Python, Swift, JavaScript, HTML, CSS, C#, C, C++
Technologies: React, Next.js, Node.js, AWS, Terraform, Docker, Kubernetes, SQL, NumPy, DevOps

PROFESSIONAL EXPERIENCE

George Mason University   August 2025 –Present
Graduate Research Assistant
- Researching game theory applications using Multi-Agent Reinforcement Learning (MARL) with Python and RLlib, implementing Q-learning algorithms to model strategic interactions in competitive business environments
- Investigating the Bertrand competition model through experimental simulations to analyze pricing strategies, Nash equilibrium convergence, and market dynamics in oligopolistic scenarios

Motate   May 2025 – August 2025
Software Developer Intern
- Building a serverless multilingual content platform using AWS Lambda/API Gateway, enabling translations across multiple languages with automated scaling, and using step functions with SageMaker for GPU-intensive tasks.
- Automated AWS environments via Terraform/GitHub Actions and optimized DynamoDB schemas with secondary indexes, improving query speeds while maintaining SOLID-coded Lambdas.

Presidio, Inc.   March 2023 – July 2024
Associate Software Engineer
- Developed internal learning platforms and retro tools using React, designing a scalable architecture on AWS with a serverless approach utilizing Lambda, API Gateway, Cognito, and RDS with MySQL for seamless data management.
- Engineered an Award Maintenance platform using Azure AD, React, Lambda, and Node.js with a Microservices architecture. Implemented a CI/CD pipeline with GitLab, streamlining the development process and ensuring faster delivery.
- Contributed to client projects for accessibility, enabling seamless interaction for hearing-impaired users, using WebRTC, React, and Microsoft Azure, delivering robust solutions for web development.

Toast, Inc.   June 2022 – July 2022
Software Developer Intern
- Managed several gigabytes of invoice bills using DynamoDB with Lambda for a serverless solution with authorizers for the REST API through API Gateway for efficient data retrieval and processing.
- Optimized data scans by implementing Local and Global Secondary indexes, reducing overall scan times by 40%. Applied SOLID principles to enhance code maintainability.

CERTIFICATION & ACHIEVEMENTS

- Certified Kubernetes Application Developer issued by The Linux Foundation (CKAD)
- AWS Certified Solution Architect and Cloud Practitioner issued by Amazon Web Services
- HashiCorp Certified: Terraform Associate (003)
- Best Prototype Award - Story3 Hackathon, HackerEarth

PROJECTS

BuyTime
A productivity tool to analyze the screen time of a user on multiple devices
- Developing an application that records the screen time of the user with precision and stores it in SQLCipher. Uses an aggregation algorithm to produce meaningful information for the time spent on applications.
- The product has a Chrome extension, a Swift app, and a React application to view and analyze information across all devices.

SkillAgent
Personalized Learning Platform for Workforce Development
- Created a personalized learning platform leveraging OpenAI to provide customized skill development plans and AI tutoring, utilizing Vite.js, Tailwind CSS, Vanta.js, and Redux Toolkit for a seamless and interactive user experience.
- Integrated OpenAI's Assistant and Threads features with a Node.js backend following the MVC architecture, utilizing Axios for API communication and Firebase Firestore for secure data storage.