

AARTHI VASUDEVAN

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Seeking Full-time SDE positions from June 2024 with 3+ years of experience; Willing to Relocate.



EDUCATION

Texas A&M University, College Station, USA

Aug 2022 - May 2024

Master of Science in Computer Engineering

CGPA: 3.8/4

• **Courses:** Distributed Systems and Cloud Computing, Analysis of Algorithms, Information Storage and Retrieval, ML, AI, Data Mining

SSN College of Engineering, Anna University, Chennai, India

June 2016 - April 2020

Bachelor of Engineering in Electronics and Communication

CGPA: 9.16/10

• **Courses:** Object-oriented programming, Database Management Systems, Web Development, Computer Networks and Architecture

WORK EXPERIENCE

Texas A&M University

College Station, USA

Graduate Research Assistant | Python, Java, PostgreSQL, REST APIs, React, Node.js, AWS, ECS, Web Scraping, ML Sept 2022 – May 2024

- Designed a Java MVC web app for senior safety. Calculated optimal walking routes based on real-time weather and sun position, leveraging a PostgreSQL database and interactive React map. Ensured code quality with JUnit unit testing.
- Engineered full-stack web apps for smart cities and construction using Python, Node.js, NoSQL databases (MongoDB & DynamoDB), & Django and Flask APIs. Dockerized & deployed them on AWS (S3, ECS, EC2, Fargate) with DevOps pipelines (AWS CodeCommit & Git).
- Managed end-to-end ownership of legacy 3D model project, performed integration testing, and deployed the model on AWS optimizing **latency by 60%** and deployment **cost** value by **65%**.
- Executed web scraping on the OSHA website using Python, BeautifulSoup, and Pandas. Extracted and organized **2000** tabulated records, and applied data preprocessing techniques to clean and structure the scraped data.
- Implemented ML-driven algorithms for object detection and classification using OpenCV. Achieved a **78% accuracy** rate with a dataset of **20,000** images with feature extraction, image segmentation, and supervised learning.

Hewlett Packard Enterprise

San Jose, USA

Software Engineer Intern | REST APIs, Python, Django, PostgreSQL, React, NLP, LLMs

May 2023 – Aug 2023

HPE GreenLake for Private Cloud Business Edition (PCBE) Pricing Calculator

- Built a scalable PostgreSQL database for custom workloads and rate cards, designed efficient React interfaces and leveraged jQuery for smooth user experience (DOM & asynchronous operations).
- Engineered high-speed APIs with Django ORM to power real-time recommendations and dynamic pricing in our innovative SaaS platform, enhancing user engagement and driving business growth.

TAPAS (Table-based Pretraining and Answer selection) - based query interface for tabular data

- Optimized and fine-tuned TAPAS, a Bert-based weakly supervised question-answering NLP model to extract insights from Parquet datasets containing system specifications.
- Achieved an accuracy of **83.25%** through rigorous hyperparameter tuning and deployed it as a Python Streamlit application providing an intuitive interface for seamless exploration and analysis.

Tata Consultancy Services

Chennai, India

Software Developer | Java, Spring Boot, Python, AWS, Job Scheduling, Microservices, Cloud Migrations

Aug 2020 - Aug 2022

- Constructed a Java microservices-based crew scheduling system for Carnival Cruise Lines using Spring Boot. Employed the Model-View-Controller (MVC) framework. Implemented a set of pre-defined business rules aimed at optimizing scheduling. Resulted in a **75%** reduction in scheduling **conflicts**, a **15%** boost in crew **productivity**, and a **30%** decrease in **infrastructure** costs.
- Leveraged my data understanding and analysis skills to identify patterns and optimize the system. Implemented automated testing to ensure its reliability and worked within an on-call schedule, demonstrating commitment and responsiveness.
- Engineered serverless AWS applications, harmonizing computing, storage, security and networking services mainly AWS ECS, S3, IAM, CloudFront, ACM, API Gateway, Lambda, DynamoDB, RDS, SQS, and SNS. Configured multiple triggers to schedule jobs leveraging AWS Batch and DynamoDB Streams. Created and deployed AWS CloudFormation templates on varied environments through Azure DevOps.
- Spearheaded the migration of on-premises apps to a hybrid cloud setup using an Agile methodology, collaborating with stakeholders and UI Design, Testing and DevOps teams to build a secure, scalable platform. Crafted reusable code components and optimized application performance for a faster, more responsive experience.
- Developed high-performance back-end services supporting cloud applications using Python (boto3) and Java SDKs, significantly reducing API response times and improving app responsiveness.

Kaashiv InfoTech

Chennai, India

Software Developer Intern | ML, Regression Models, Python

May - June 2019

- Built an **85% accurate** weather forecasting model in Python using linear regression. Preprocessed data and engineered features for robustness, employing cross-validation and regularization for optimal performance. Evaluated with MAE, RMSE, and R-squared metrics.

PROJECTS

- [Parallelizing Strassen’s Matrix-Multiplication Algorithm](#) | C++, CUDA, OpenMP, High performance resource computing

Dec 2023

 - Implemented shared-memory parallelization using OpenMP tasks to optimize recursive calls in Strassen's matrix multiplication algorithm. Conducted performance benchmarking and optimization, achieving significant speedup in matrix multiplication operations compared to sequential algorithms.
 - Utilized high-performance computing resources to execute intensive computations efficiently, leveraging distributed computing environments to further enhance performance and scalability.
- Customer Relationship Management (CRM) System | Java, Spring Boot, MVC, Hibernate, MySQL, Security management

Dec 2020

 - Developed a secure, role-based CRM using Spring MVC, Java, and Hibernate for smooth database interaction. Implemented secured login (Spring Security), encrypted passwords (bcrypt hashing), and enabled granular access control to manage customer data. Leveraged MySQL for customer data storage.
- Modern & Tech-Forward | Node.js, REST APIs, PostgreSQL, React, User authentication

Mar 2022

 - Structured a robust PostgreSQL schema for reliable storage of user data, course content (text, video), progress, and gamification elements. Built RESTful APIs for user auth, course management, data access, and recommendations. Leveraged Node.js for real-time features: interactions, recommendations, and notifications.
 - Developed a dynamic and user-friendly interface with React.js for user profiles, course interfaces, video playback components, and social interaction features. Integrated gamification elements like badges and points using React to enhance user engagement.
- Smart Spying Robot with Thermal Vision – [IEEE Publication](#) | Python, Mobile Application, Virtual Network, Firebase

Dec 2019

 - Developed a web app-controlled robot equipped with thermal vision capabilities. Streamed live data over a virtual network and stored timestamped results on the cloud, showcasing proficiency in Python and IoT technologies. Implemented motion control algorithms to enable precise and responsive movement of the robot, enhancing its navigational capabilities and user control.
- [tamuGPT](#) | RAG, LLMs, GPT-3, Web crawling, Python, Scrapy

Apr 2024

 - Spearheaded the development of tamuGPT, a fusion of RAG-enhanced GPT-3 with web-crawled data, surpassing vanilla RAG and GPT-3. Demonstrated a significant improvement in information retrieval accuracy by retrieval augmented generation.
 - Designed and implemented a user-friendly interface for tamuGPT, allowing for intuitive interactions and seamless integration with various applications, enhancing user accessibility and experience.
- Intelligent Traffic Signal Control System – [IEEE Publication](#) | ML, OpenCV, Python

May 2020

 - Estimated traffic densities using HAAR Cascade classifier and achieved **70% precision**. Designed and implemented an adaptive traffic signal control system, demonstrating proficiency in machine learning and computer vision techniques. Utilized real-time data streaming and processing to adapt traffic signals dynamically, reducing congestion and improving traffic flow in the simulated environment.
- [Event Management Application \(EventNXT\)](#) | Full Stack Development, Ruby on Rails

Dec 2022

 - Enhanced a real-time event management application by integrating new features and optimizing **response time** by **20%**. Leveraged full-stack development skills and Ruby on Rails framework to deliver an improved user experience. Implemented robust error-handling mechanisms to enhance application reliability and user experience, ensuring smooth navigation and minimizing disruptions during usage.

TECHNICAL SKILLS

• Programming & OS	Java, Python, C++, C, R Programming, Data Structures, Ruby, Linux
• Web Development	RESTful APIs, Spring Boot, MVC, Hibernate, HTML, CSS, JavaScript, Node.js, React, jQuery, AJAX, Django, Flask, Streamlit
• Cloud Platforms	AWS, Microsoft Azure, Docker, Firebase
• Machine Learning	Pandas, PySpark, Numpy, Keras, Tensorflow, PyTorch, NLP, LLMs, BERT, Transformers, TAPAS
• Data Mining	Statistical Analysis, Classification, Regression, Data Processing, Modeling
• Databases	MySQL, NoSQL, PostgreSQL, DynamoDB, MongoDB
• CI/CD	GitHub, Azure DevOps, AWS CodeCommit

CERTIFICATIONS AND COURSES

• AWS Certified	Developer – Associate	2022
• Microsoft Certified	Azure Fundamentals, Azure Data Fundamentals & Azure AI Fundamentals	2022
• Udemy	Full Stack React Js with Redux, Node.Js, Express.Js, MongoDB	2021
	The Complete 2024 Web Development Bootcamp : HTML, CSS, Javascript, Node, React, PostgreSQL	2020
	Python for Data Science and Machine Learning Bootcamp, DevOps, CI/CD for Beginners	2020
• Coursera	Spring MVC, Spring Boot and Rest Controllers	2020
	SQL for Data Science, Neural Networks and Deep Learning	2020

AWARDS AND ACHIEVEMENTS

- ‘Star of the Quarter Award’, Tata Consultancy Services
 - ‘Academic merit scholarships’, SSN College of Engineering & ‘University Rank Holder’, Anna University
- 20222021