Madhav Shroff, Software Engineer

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PROFILE

Embodying a diverse skill set, this trailblazing software engineer adeptly employs cutting-edge technologies to forge innovative solutions, spanning from ICU-grade medical interfaces to AI-centric services, ground-breaking blockchain applications to pioneering amalgamations of technology and centuries-old artistry. His notable efficiency, unwavering commitment to lifelong learning, and personable collaborative spirit consistently position him as a priceless asset to any forward-thinking, dynamic team.

EDUCATION

Aug 2021 — May 2023

MS, Software Engineering, George Mason University
Fairfax, Virginia

SWE 619: Advanced Object-Oriented Specification,   SWE 530: Advanced Algorithm Analysis and Design

SWE 622 - Distributed Software Engineering,   SWE 637: Software Testing

Aug 2017 — Aug 2021

BTech, Computers and Communications Engineering, Manipal Institute Of Technology
Karnataka, India

Minor in Soft computing - Neural Networks, Foundational AI and Formal Systems of proof

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EMPLOYMENT HISTORY

May 2023 — Present

Founder, MakeItAiFor.Me
Fairfax, VA

- Building a suite of **Large Language Model-based tools** to augment Businesses and Individuals with powerful tools that can **10x their productivity**.
- Established a **robust development framework**, facilitating **efficient integration** and **continuous deployment** of updates to the tools.
- Bootstrapped a highly performant **full-stack** web application using React.js and Nest.js, that handles the **Frontend User Experience**, **Authentication**, **REST and LLM API calls**, Generation of **Vector Embeddings, Payments, Secure, encrypted storage of user data** in both **vector and SQL databases, and load balancing across multiple DNS,** among many other functions.

Jan 2020 — Aug 2021

Lead Software Engineer, Ventilators - Java, Android 11, DVB Design and Engineering - DVB Inventek
Hyderabad

- Spearheaded the development of a low-cost ICU-grade ventilator interface using **Android** and **Java** for a 10″ tablet, ensuring fault tolerance, responsiveness, and dependability, while **aligning business capabilities to technology solutions**.
- Utilized Android's Lock Task API for Dedicated Devices to create a single-purpose, **event-based architecture**, transforming an Android tablet into a kiosk-like screen.
- Ensured compliance with user interface **accessibility standards** (ISO: IEC 62366) for medical devices, demonstrating a **solid grasp of software/platform design principles**.
- Optimized **Java** memory management by implementing **best practices**, resulting in a 35% reduction in average RAM use and eliminating stuttering in the interface.
- Leveraged **RxJava** to identify and correct errors in data representation, ensuring dependable **multithreading**, inter-component communication, and **asynchronous data processing** for **improved data usage efficiency**.
- Employed **Apache Kafka** to analyze Real Life Ventilator use data reports, successfully identifying faulty sensor/hardware by evaluating deviations from expected curves, resulting in improved system dependability.
- Continuously refined the UI in weekly stable releases by incorporating **usability feedback** from doctors and ventilator technicians, leading to exceptional praise with comments like, "The device is **more user-friendly** than a Phillips-made machine at the same price,"

Jan 2021 — May 2021

Business Intelligence Analyst, Epiq Global
Hyderabad

- Automated data engineering and management pipeline tasks by creating **SQL Server** job scripts, reducing human dependency, and **improving data quality**.
- Implemented managed search and lookup for client projects leveraging internal **C#, .NET Core microservices network, and API architecture.**
- Delivered data-driven insights through **Power BI and SQL Server** visualizations for **150+ clients** across **1000s of projects**, while **performing data profiling, data analysis, and data modelling** of pricing data, cloud hosting fees, billing and monitoring costs.

- Developed **C# and .NET Core** with **AWS RDS** to automate data pipelines between **Snowflake** and **AWS Redshift**, leading to a 12% reduction in static memory usage costs.
- Designed a testing suite with **C# and .NET Framework** for efficient unit and regression testing of data engineering commands.

May 2022 — Aug 2022

Research Assistant, DevX Lab @ George Mason University

Fairfax

- Collaborated with Dr Thomas Latoza and Dr Abdulaziz Alaboudi on developing a Chrome extension using **TypeScript and AngularJS** to enhance debugging processes by utilizing contextual information to identify and **fix software bugs**.
- Employed **JavaScript**'s Abstract Syntax Tree and code decompilation tools to mine evidence, calculate and rank likely bug locations.

Dec 2018 — Jan 2019

Blockchain Research Intern, Real Variable

Hyderabad

- Authored a white paper, "Quorum: An analysis on Quorum, and its subsidiary technologies, applications, alternatives, and relative complexity," for internal study and review.
- Deployed a test/demo network comprising a cluster of **Docker** containers orchestrated using **Kubernetes** and hosted on **AWS EC2** servers, capable of performing private data transactions via **REST APIs**, **RPCs** and an **AngularJS**-built dashboard.

Aug 2018 — Aug 2020

System Administrator, Manipal Institute Of Technology, Manipal

Manipal, India

- Developed and maintained web infrastructure using **React.js, NoSQL** Databases like **MongoDB** and **Cockroach Labs DB** for college events, including payment portals and registration sites, serving 10,000 users at peak times and processing over 22 Lakh INR for 100s of vendors.
- **Increased the number of event registrations by 14%** compared to the previous year, through improved User Experience, and a smoother Interface.
- Automated registration, invoicing, and event updates with custom scripts, which **reduced manual labor costs by 25%** and improved accuracy.
- **Led a team of 12 volunteers** as a Core Committee Member, developing and implementing platform management strategies, maintaining a 99.95% up-time by utilizing AWS services, such as **AWS S3** for storage and **IAM roles** for access management.

SKILLS

General Purpose Programming Languages: C#, .NET, *Python, Java, C++*

Databasing: Microsoft SQL Server, *MySQL, PostgreSQL, AWS RDS*

Data Analytics: *Apache Kafka, Power BI for Visualizations, Python for Analytics and Visualizations, Python for Deep Learning and AI*

Platform Frameworks: .NET Framework, *.NET Core, Terraform*

Web: *HTML, CSS, JavaScript, React.js, TypeScript*

Cloud and DevOps: *AWS (S3, IAM roles, CloudFormation, Elasticsearch, MSK, Security), Docker, Kubernetes, Ansible (Configuration Management and Automation), Jenkins (Continuous Integration and Continuous Deployment), CI/CD, git, SOAP and RESTful APIs*

Operating Systems: *Linux, POSIX, Windows*

Other Skills: *Agile Project Management, Blockchain Technologies (Quorum, Ethereum), Software Testing, UI/UX Design, 3D Modeling and Game Art Design*

COURSEWORK

Andrej Karpathy's Deep Learning Series

PMI Agile Certified Practitioner (PMI-ACP)® Certification (In Progress)

The PMI Agile Certified Practitioner (PMI-ACP) formally recognizes knowledge of agile principles and skills with agile techniques.

Applied Econometrics: Mostly Harmless Big Data

Offered by Massachusetts Institute of Technology