Abhirama Vadiraja Sonny

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EXPERIENCE

FTC Robotics, Team *7172 Technical Difficulties*
Programmer - www.ftc7172.org *Aug 2024 - Present*

- FTC Hall of Fame **3rd**, MTI `25, World Championships `25
- Developed software for LimeLight 3A to use CNNs to detect game elements and allow a robot to navigate to them autonomously.
- **7x** North Texas Winning Alliance Captain, North Texas Control Award **1st**, Worlds Connect Award **1st**.

Contextra AI
CEO & Founder - www.contextra.org *July 2025 - Present*

- Building a startup that adds an AI agent to your iMessage group chats.
- Core functionality includes web integration with online vendors to facilitate easy ordering, smart scheduling with Google Calendar, and smart summaries, among other features.
- Used Heroku, OpenRouter, and PostgreSQL.

Durin VC
SWE Intern *May 2025 - Aug 2025*

- Working on internal projects focused on **CRM** software and PDF Redaction
- Used react-native, OpenRouter, Electron, Rust.

Mysore University
Student Researcher *July 2025 - Aug 2025*

- Wetlab Research on endophytes under the guidance of Dr. S. Umesha, Department of Biotechnology.
- Worked on the preparation of Nutrient Agar, Potato Dextrose Agar, and isolating endophytes from plants.

Cambridge Centre for International Research
Student Researcher *May 2025 - Aug 2025*

- Researched cell signatures in autoimmune conditions, specifically Myocarditis, under the guidance of Dr. Jodi Kraus.
- Worked on a project that could distinguish between cells with the signatures for myocarditis between control cells; achieved ~95% accuracy in wet-lab testing

PROJECTS

Custom AI Agentic Framework

Developed a custom agentic framework for Contextra AI that surpasses the performance and accuracy of the leading industry standards, including *Letta*, *AGiXT*, *AutoGen*, etc, by **25%**. The system supports dynamic tool routing, hierarchical memory, and real-time context switching across multi-user group chats and different LLM models.

Deep Learning Powered Classification and Analysis of Standard Heart Views in Ultrasound Imaging for Enhanced and Quicker Cardiac Diagnosis

Developed a **multimodal** AI mobile app using Convolutional Vision Transformers (**CvT**) to extract metrics from echocardiograms, integrating a Retrieval-Augmented Generation (**RAG**) pipeline with vector search to supply DeepSeek r1 with diagnostic context. Achieved a 93% accuracy with LLM diagnosis; designed to support cardiac sonographers and enhance patient understanding.

Decentralized Dynamic Path Optimization for Enhanced Efficiency and Safety in Autonomous Vehicle Networks

Co-authored a JISEM paper/patent proposing a peer-to-peer framework for **autonomous vehicle** (AV) routing that shares real-time position, velocity, and environmental data to preempt collisions and reduce congestion. Each AV

optimizes its route using data from neighboring vehicles, enabling dynamic, decentralized path planning.

Java Neural Network

Designed and implemented a custom neural network framework from scratch in Java, utilizing linear algebra, multithreading, and object-oriented programming for efficient computation and scalability.

Jaithon

Designed and implemented a custom programming language merging Java and Python principles.

HONORS & AWARDS

USACO Gold Division

Promoted to the Gold Division in the USA Computing Olympiad during the February 2025 competition. Top 5% of competitors nationally. Achieved a score of 795/1000 on the US Open Contest, 2025.

USABO Semifinalist

Qualified for the Semifinals examination on the USA Biology Olympiad, after achieving a score of 39/50, ranking me in 4th place nationally, among all test takers. Was an honorable mention (t125 scorers) on the semifinals exam.

USMDO Silver

Achieved a silver rank nationally on the US Medicine & Disease Olympiad, scoring 149/160 over various diagnostic problems, placing me in the top 5% of test takers.

1st Place @ Amplicode Hackathon 2025

1/900+ contestants for developing an app that can analyze echocardiograms and provide a comprehensive diagnosis using LLMs and multimodal AI.

VOLUNTEERING & LEADERSHIP

VipraVrinda

Primary Web Developer - vipravrinda.org *Nov 2024 - Present*

Vipravrinda is a non-profit organization that unites the Kannada Brahmin community in North America to preserve culture, foster connections, and support future generations.

- Designed and developed a responsive website, resulting in a streamlined onboarding process for **200+** members in Dallas, Texas.
- Collaborated with leadership to align technological solutions with organizational goals, supporting long-term cultural preservation initiatives.

VEX Robotics

Coach, Mentor, Programmer - irrationalrobotics.org *Sept 2023 - Present*

- Coach of 8 teams; helped teams develop autonomous programs and create strategies, putting them in a competitive position at Worlds.
- First AllenISD VEX v5 qualifications for the MS VEX v5 World Championships, and Ereckson Middle School's qualification to the VEX IQ and VEX v5 World Championships.
- Programmer on private team 14142A Axiom

ASPIRE (Advancing Students' Potential in Robotics & Engineering)

Co-Founder, Co-President *Sept 2023 - June 2025*

- Established a robust, free robotics education infrastructure for students across three middle schools.
- Organized a summer camp for middle schoolers across the DFW area, with **50+** campers and **15+** HS mentors attending.
- Oversaw mentors for 10 student teams (**~70** middle school students) in VEX Robotics, leading to multiple qualifications for the VEX V5 and VEX IQ Worlds Championships.