

JEGADIT SAKTHI SARAVANAN

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Education

University of Illinois at Chicago

MS in Computer Science

2024 - 2026

GPA: -./-.-

Amrita Vishwa Vidyapeetham, Coimbatore, India

B.Tech in Computer Science and Engineering - First Class with Distinction

2020 - 2024

GPA: 8.1/10

Experience

Deep Water Marine Club (DWMC) | [Website](#) | Volunteering

May 2022 – June 2024

Founder of the club, Robotics Engineer & ML/DL Researcher

- This project has received funding from The IOT lab, School of Computing, Amrita Vishwa Vidyapeetham, Coimbatore.
- Supervised the design and construction of the [Autonomous Underwater Vehicle \(AUV\) named Sea Dragon](#).
- Spearheaded the development of an improved sensor noise reduction algorithm ([AGAKF algorithm](#)) for the AUV, enhancing the precision of navigation and control by 87-95% even in complex underwater environment.
- Successfully applied DL techniques based on reinforcement learning in automating the navigation of the AUV.

TIFAC-CORE in Cyber Security | [Website](#)

Nov 2022 – March 2023

Part Time Project Staff

Amrita Vishwa Vidyapeetham, Coimbatore

- Performed various application testing strategies, reverse engineered and rebuilt applications with custom vulnerabilities.
- Successfully emulated the CVE-2019-11932 vuln in an isolated virtual environment on older versions of WhatsApp.
- Built a Neural Network Architecture that can distinguish Encrypted and Compressed data with an accuracy of 72%

Publications

Enhancing AUV Sensor Precision with Adaptive Genetic Algorithm aided Kalman Filtering (AGAKF)

Yet to be published | [Python](#), [MATLAB](#), [Simulink](#)

AI based parameter estimation of ML model using Hybrid of Genetic Algorithm and Simulated Annealing

[IEEE Xplore](#) | [PyPi](#) | [Github](#) | [Python](#), [scikit-learn](#)

Selected Projects

JSS-Optimizer - Python Package | [Blog](#) | [Github](#) | [PyPi](#) | [Python](#)

- Developed a Python package for hyperparameter fine-tuning and optimization, based on the research paper "[AI based parameter estimation of ML model using Hybrid of Genetic Algorithm and Simulated Annealing](#)"
- Integrated with machine learning models for hyperparameter tuning, focusing on efficiency & performance improvement. Provided support for Random Forest Classifiers & Regressors and ensured compatibility with diverse datasets.
- Released multiple versions, with enhanced features and improved performance. Actively working on extending the package's capabilities to handle a wider range of data and model scenarios for future releases.

Amrita University Canteen App | [Blog](#) | [Github](#) | [Python](#), [Flask](#), [Tensorflow](#)

- Created a Web application using Flask to show the current menu and crowd statistics in the college's canteens.
- Custom DL models were built on the 'ssd-mobilenet-v2-fpn-lite-320' model to process and extract data from CCTV images of the menu. The same CCTV images were also used to process the crowd density in the canteen.
- Was under consideration for adoption in the canteens by the college board. But, not pursued for undisclosed reasons.

Customer Churn Prediction Analysis | [Github](#) | [Python](#), [Flask](#), [scikit-learn](#)

- Developed a web application using Flask to predict customer churn for a service, leveraging ensemble machine learning techniques such as max-voting and stacking.
- Achieved 98% accuracy by implementing advanced ensemble methods, optimizing the model's predictive performance.

Skills

Languages: C, C++, Python, Java, JavaScript, Haskell, Bash

Developer Tools & frameworks: VS Code, Eclipse, Google Cloud Platform, TensorFlow, Android Studio, AWS, NGROK, NGINX, GIT, Docker, Wireshark, Postman, Burp Suite, ApacheWeb Server, Jira

Modelling Tools: SketchUp, SolidWorks, AutoCAD

Web Technologies & frameworks: HTML, JDBC/ODBC, Flask, Bootstrap, REST and JavaScript, CSS

Database: MySQL

OS: Windows and Linux

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Enhancing AUV Sensor Precision with Adaptive Genetic Algorithm aided Kalman Filtering (AGAKF)

[Github](#) | Yet to be published | *Python, MATLAB, Simulink*

Jegadit S Saravanan, Nithish U S R, Giri Prasath R, Balaji B, Dr.Anantha Narayanan V, Dr.Tata Sudhakar

AI-based hybrid optimization technique for ML models

[Github](#) | [IEEE Xplore](#) | [PyPi](#) | *Python, scikit-learn*

Jegadit S Saravanan, Dr.Anbazhagan Mahadevan

Selected Projects

Sea Dragon - AUV | [DWMC](#) | [Website](#) | *ESP32, Raspberry Pi 4B, L298N, LifeCam VX-2000, BMP280, DS18B20*

- Collaborated in multidisciplinary teams to refine the mechanical design, electronic circuitry, and software architecture, ensuring cohesive integration and functionality.
- Developed and integrated real-time data processing algorithms on the Raspberry Pi 4B, enabling autonomous navigation and decision-making based on sensor inputs.
- Achieved a significant enhancement in AUV performance by integrating AGAKF, leading to a 90% reduction in sensor noise and substantial improvements in data accuracy and reliability, contributing to more precise underwater navigation.

Juggernaut - ROBOWAR | [Github](#) | *Arduino Mega, L298N, HC-05*

- Optimized robot design and functionality to withstand rigorous combat conditions, utilizing robust mechanical and electronic components for durability and reliability.
- Implemented Bluetooth Low Energy (BLE) technology for seamless and responsive wireless control of the Juggernaut during Robowar competitions, enhancing maneuverability and tactical flexibility in dynamic combat environments.
- Successfully competed in Robowar events, showcasing the robot's reliability and performance under competitive stress, and achieving commendable results in challenging combat scenarios.

Amrita University Canteen App | [Github](#) | *Python, Flask, Tensorflow*

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- Spearheaded the development of an improved sensor noise reduction algorithm (**AGAKF algorithm**) for the AUV, **enhancing the precision of navigation and control by 87-95%** even in complex underwater environment.
- Developed a comprehensive dashboard for an **Autonomous Underwater Vehicle (AUV)**, integrating real-time sensor data visualization, media resource management (video, images, audio), & remote control functionalities.
- Implemented advanced Deep Learning algorithms to autonomously navigate the AUV and enhance data processing efficiency.

TIFAC-CORE in Cyber Security | Website **Nov 2022 – March 2023**
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Selected Projects

Profile Builder and Networking Application | Github | Python, Flask, Bootstrap MySQL, AWS, Docker, Jira

- Web app. built for the students & faculties of Amrita University to network people based on their desired research field
- Built using HTML, CSS, JS, Bootstrap on Flask webserver with MySQL database by following the Agile (Scrum) practices for managing the project using Jira and performed various automated testing techniques.
- Was tested in an isolated docker environment, & following the DevOps practices, was deployed on an EC2 AWS instance.

Job Allocation and Time Optimization System | Github | Java

- Utilized Java OOP paradigm including classes & objects to model workers, jobs, and tasks. Employed inheritance to extend base classes for specialized job types and worker roles, enhancing code reusability and maintainability.
- Created algorithms to calculate minimum job completion times and sequence tasks to minimize delays. Implemented dynamic hiring mechanisms to address job vacancies and adjust worker allocation based on job deadlines.
- Employed Java multithreading to handle simultaneous job assignments and worker scheduling, significantly improving system performance and responsiveness during high-demand scenarios.

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OS: Windows and Linux

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Experience

Deep Water Marine Club | [Website](#) | Volunteering

May 2022 – June 2024

Founder of the club, Team Leader of the Robotics & Research team

- Founded and led a student club, overseeing diverse projects and departments, fostering a collaborative and innovative environment.
- Organized and chaired regular club meetings, maintained meticulous records, and managed administrative tasks such as budgeting, procurement, and resource allocation, ensuring efficient operations and adherence to university policies.
- Collaborated with university departments and external institutions to facilitate research and development initiatives, securing resources and support for various projects.
- Established partnerships with industry experts and other research institutions to provide valuable insights and learning opportunities for club members.

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Part Time Project Staff

Amrita Vishwa Vidyapeetham, Coimbatore

- Conducted comprehensive analyses and documentation of project workflows and identified security vulnerabilities, implementing detailed solutions to mitigate risks.
- Collaborated with a multidisciplinary team to ensure alignment with project goals and timelines, coordinating efforts across various functions to drive project success.
- Managed extensive data collection processes and generated detailed reports, delivering actionable insights to supervisors and stakeholders to support strategic decision-making.
- Assisted in the development and testing of security protocols, contributing to the enhancement of overall system security and robustness.
- Coordinated training sessions and workshops for team members on emerging cybersecurity trends and tools, fostering a culture of continuous learning and professional development.
- Engaged in proactive problem-solving to address project challenges, refining analytical skills and enhancing the team's capability to adapt to changing requirements.

Skills

Communication Skills: Effective in verbal and written communication, with experience in delivering presentations and writing detailed reports.

Organizational Skills: Proficient in managing multiple tasks and maintaining accurate records. Experienced in event planning and resource management.

Adaptability: Flexible and quick to learn new tasks and environments. Demonstrated ability to adapt to dynamic settings and varying responsibilities.

Customer Service: Experience in roles that require public interaction, providing assistance, and resolving issues with professionalism and empathy.

Technical Proficiency: Skilled in using Microsoft Office, Google Workspace, and basic IT troubleshooting.

Data Management: Experienced in data collection, analysis, and reporting with a focus on accuracy and clarity.

Computer Science Engineering: Strong foundation in computer science principles, including programming, algorithm design, and software development. Proficient in multiple programming languages and software engineering tools.

Extracurriculars

- Volunteered for seva activity work at AIMS Kochi
- Level 5 robotics certificate holder from AROBOT institution
- Qualified in NATIONAL ENGINEERING OLYMPIAD 5.0 (NEO5.0)
- Diplôme d'études en langue française - DELF A2