Ambareesh V

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GitHub Profile
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Academic Achievements

- **Finalist - Smart India Hackathon**
  - Co-leader of One of the very few hardware teams which got shortlisted for SMART INDIA HACKATHON, World's biggest open platform for the innovators or entrepreneurs
  - Had the opportunity to interact with Hon'ble minister of education Mr. Dharmendra Pradhan

- **Other**
  - Achieved top position twice in the Spell-Bee contest, Conducted by English Literary Club
  - School Topper in Senior Secondary 2019 and Higher Secondary in 2021.
  - Srinivasa Ramanujan memorial Mathematical Quiz: Secured the top position at the zonal level and became one of the district champions.

Research Experience

- **National Institute of Technology, Trichy** *Trichy, India*
  SOC estimation of Lithium-ion battery using Kalman filter (Under Dr Dhanalakshmi) July '23
  - The State of Charge, one of the battery capacity state parameters is measured through measurable variables such as voltage, current and temperature and the values are stored in the IoT cloud over a period.
  - Then with the use of Kalman filter the values are brought close to the true value and the error analysis is done by comparing with the values stored in the cloud.

- **National Institute of Technology, Trichy** *Trichy, India*
  Atomic Force Microscopy (Under Dr Sriram Shankar) Aug 2023 - Present
  - Development of a Multi-axis Actuation System for the probe in Sub-surface scanning probe microscopy. Changes due to atomic interactions are sensed and the detected changes are obtained as changes in electrical parameters using microscopic instruments.
  - The signal conditioning circuit with the chosen IC was simulated, Error budgeting is done, and the PCB design is under progress.

Work Experience

- **Success4** *Chennai*
  Summer Internship Jun 2023 – Aug 2023
  * Worked as Software developer in both front-end and back-end development.
  * Built feedback form to write a review of the candidates who attended the interview to submit a payload consisting of the level of interview and recommendation using HTML, CSS, JavaScript, Flask, and MySQL.
  * Additionally Practised Customer Success Management, Database management, and data analytics

Education

- **National Institute of Technology** *2021-2025*
  BTech **CGPA: 7.89/10**

Club, academic and competitive Projects

- **Autonomous Bot,** | Coordinated and contributed to the project whose objective is making a self-driving machine designed to deliver goods or packages to specified locations without human intervention. They use various technologies like AI, ML, OpenCV, GPS and other basic sensors, and cameras to navigate and interact with the environment. These bots have the potential to revolutionize the delivery industry by increasing efficiency and reducing operational costs.
- **Coal Wagon sleuth**| Develope a system of IoT Devices to prevent under-loading / overloading of Railway wagons. The data were collected by interfacing sensors with a microcontroller in the internet. Then the data-set was used to train an ML model. Along with the data-set, the model was also trained with the images of an ideal load.

- **Detection of A, T, and C losses** | This project involved the development of a smart and cost-effective solution to detect any unauthorized power theft in real-time. By integrating various components with Arduino to collect and analyze power consumption data.
- **Automatic Phase switching** | Designed a working device for auto selection of any available phase in a 3-phase supply system using Step-up transformers, voltage sensors, and a microcontroller. Performed trade-study to identify the efficient method for implementation. Designed circuits and identified critical components. Acclaimed by officials from The Boeing Company during the Transfinitte hackathon
- **The EVER go-kart** | Designed a fully working go-kart for the NEKC competition with a team of 15. Lead the electronics and powertrain subteam and aided in parameter determinations of the electronics competition which required complex mathematical analysis
- **IoT based agricultural support systems** | In an IoT-based Agricultural Support System employing ESP32, sensor nodes collect data on soil moisture, temperature, and environmental conditions. The ESP32, acting as a central processor, facilitates data aggregation and wireless transmission to a cloud-based platform. Through real-time monitoring, farmers receive insights into crop health, allowing for timely irrigation and environmental adjustments. The ESP32's connectivity and processing capabilities enable seamless data analysis, providing actionable insights for optimizing crop growth and resource utilization.
- **IoT based patient health monitoring systems** | The temperature and pulse sensors are connected to a microcontroller to track the status, which is interfaced to an LCD. All information about health will also be stored online.
- **Orthoscopic light source** |Designed a circuit to provide continuous power to the light source for the orthoscope. Control the switching using an ESP32-embedded processor. Regulated power to the orthoscope's light source, an ESP32 can control a MOSFET relay interfaced between the power source and the light. The ESP32's GPIO pin connects to the relay's control input, allowing it to toggle the power supply. Through programmed commands, the ESP32 manages the relay, enabling seamless on/off functionality for the orthoscope's light. This setup ensures precise control, facilitating operational convenience and potentially enabling automation or remote control capabilities.

Technical Skills

Expertise: Electric Vehicle design-dynamics, Internet of Things, Robotics, Microprocessors and microcontrollers, Image processing, Control theory, FPGA, Mechatronics, Product Design, Sensors and Transducers, Industrial automation

Languages: Embedded C, Python for raspberry Pi, HTML, CSS, JavaScript, SQL, C/C++.

Engineering Softwares: MATLAB, Simulink, Autodesk Eagle, Solidworks, Ansys, Proteus, Arduino create agent, TINA, Coppelia Sim, RoboDK, Autocad, LTSpice, PSpice, MACSpice.

Developer Tools, frameworks and OS: VS Code, GIT, bootstrap, tailwind, angular, Ubuntu, MongoDB, flask, Django

Other Softwares: LaTeX, Final Cut Pro, Illustrator, Photoshop, Final Draft.

Positions of Responsibility

- **Vehicle Dynamics Engineer, Electric Vehicles and Energy Resources**
  - Worked in the EVER club, the technical EV and innovation club at Powertrain and autonomous systems subteam for various competitions such as Sangam, Smart India Hackathon, Transfinitte, and NEKC season 4.
  - As a member of this community, I can delve into mechanics and electronics to utilize them to make and produce practical solutions to everyday problems related to EVs, batteries, and energy resources.
- **Deputy Manager and Content Creator, Social Council NITT**
  - Worked as a Designer and designed posters for many events. Organised activities during the events such as Social Week and Humanitty.
  - Served as a Head for content team, wrote content for blogs and reports for activities done during the flagship events.
- **Manager, NITTFEST Social Responsibility team**
  - Worked during the NITTFEST '23, brought in 2 companies for promoting corporate social responsibility. Hosted awareness events and stuck awareness posters to save PHC's around Trichy with the CSR funds.
- **Manager, Tamil Mandram**
  - Worked as a Film Critic. Wrote Reviews for critically acclaimed films. Wrote Blog Content.
  - Took celebrity interviews, Hosted celebration events for Pongal and tamil new year. Wrote an article in yearly magazine NITTILAM.
- **Deputy Marketing Manager, SENSORS, Department Symposium**
  - Worked during the previous edition of Sensors, the ICE department symposium as a marketing manager. Brought in 3 sponsors and acted as POC for a food stall.

Extracurricular Activities

- **Secured second prize in Short Film contest in the Inter-Departmental Cultural Festival of NIT-Trichy.**
- **Conducted Workshop during the inHotts for first years about the EV batteries.**
- **Master Level in Silambam, a Traditional Stick-based Martial Art.**