Swaminathan PL

Chennai, Tamil Nadu

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Education

Indian Institute of Information Technology Kottayam   **Nov 2022 – Present**
*B.Tech in Electronics and Communication Engineering (**CGPA: 9.24** Upto Semester 6)*   *Kottayam, Kerala*

Velammal Bodhi Campus   **Jun 2021 – Aug 2022**
*Class 12 - CBSE **93.5%** in CBSE Board Examination and **94.98** percentile in JEE Mains.*   *Chennai, Tamil Nadu*

Experience

Positive Integers Pvt Ltd   **Dec 2024**
Data Science Intern – Machine Learning   *Chennai, Tamil Nadu*
- Built **scalable data pipelines** for real-time supply chain analytics using **Python**, improving ML model accuracy by **10%**. Automated validation and transformation of **high-volume datasets** (over 1000 data points) using **asynchronous workflows** for efficient data processing. Created and documented **machine learning models** to streamline data flow.

NIT Tiruchirappalli   **Jun 2024 – Jul 2024**
Research Intern – Networking   *Tiruchirappalli, Tamil Nadu*
- Worked under **Dr. B. Nithya**, Assistant Professor on advanced wireless networking research. Simulated **Flying Ad Hoc Networks (FANETs)** in **NS-3 (C++)** to optimize TCP performance, diagnosed issues in **multi-tier architectures**, performed low-level **debugging** in **Linux**, and authored a comprehensive **research paper** detailing the methodology and results.

Projects

LiveSync - Smart Mesh Meet | *Node.js, Express.js, MongoDB, Socket.IO, PeerJS, EJS* 🔗 🔗   **Jun 2025 – Aug 2025**
- Built a scalable, real-time **video conferencing system** supporting both **synchronous and asynchronous communication**. Implemented **WebRTC** via **PeerJS** in a **mesh topology** for peer-to-peer connectivity, supporting up to **3-5 participants** at 480p resolution.
- Designed a **multi-tier backend** with **Express.js** and internal APIs for authentication and user management. Integrated **MongoDB-based user authentication** and **JWT** for secure access and session management.
- Added **TURN server** support for reliable peer connections for more than 3 users. Enabled **audio and video toggle, screen sharing**, and live chat via **Socket.IO**. Deployed using **Render** with a fully responsive UI.

ShopSphere - Fashion and Lifestyle Online Store | *HTML5, CSS, JavaScript* 🔗 🔗   **May 2025**
- Built a **responsive E-Commerce web application** with polished UI and smooth navigation.
- Implemented a **dynamic product catalog**, persistent **shopping cart** via **localStorage**, and real-time coupon application. Deployed on **GitHub Pages** with a modular frontend architecture for easy backend integration.
- Planning to integrate **Node.js, Express.js, and MongoDB** for full-stack capabilities, including **RESTful APIs**, **user authentication**, and server-side logic.

Technical Skills

Languages: C/C++, Python, JavaScript, SQL, HTML/CSS
Frameworks & Libraries: Node.js, Express.js, PeerJS, Socket.IO, Scikit-learn, TensorFlow, Keras, Pandas, NumPy.
Databases: MySQL, MongoDB
Tools: Git, Jupyter, Kaggle, MATLAB, VS Code
Concepts: Backend Development, REST APIs, API Integration, File & Operating Systems, CI/CD pipelines, Data Structures and Algorithms, Security (JWT), Regression, Classification, Neural Networks.
Competitive Programming: CodeChef, Codeforces, LeetCode
Familiar with **backend design patterns**, **scalable systems**, and **agile development principles** through hands-on academic and personal projects. Proficient in **debugging**, **testing**, and collaboration using **Git**.

Achievements

- Solved **1200+ DSA problems** across **LeetCode**, **CodeChef**, and **Codeforces**, demonstrating expertise in algorithms, data structures, and problem-solving.
- LeetCode max rating: **1759** and rated top **10%** among all LeetCode users, with a **400+ day** daily streak.
- CodeChef max rating: **1623 (3 Star)**, Global Rank **80** in STARTERS 185 (Div 3).