

# SWAMINATHAN PL

Chennai, Tamil Nadu

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## Education

<b>Indian Institute of Information Technology Kottayam</b> <i>B.Tech in Electronics and Communication Engineering (CGPA: 9.24 Upto Semester 6)</i>	<b>Nov 2022 – Present</b> <i>Kottayam, Kerala</i>
<b>Velammal Bodhi Campus</b> <i>Class 12 - CBSE 93.5% in CBSE Board Examination and 94.98 percentile in JEE Mains.</i>	<b>Jun 2021 – Aug 2022</b> <i>Chennai, Tamil Nadu</i>

## Experience

<b>Positive Integers Pvt Ltd</b> <i>Data Science Intern - Machine Learning</i>	<b>Dec 2024</b> <i>Chennai, Tamil Nadu</i>
– Built scalable data pipelines for real-time supply chain analytics using Python, improving ML model accuracy. 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.	
<b>NIT Tiruchirappalli</b> <i>Research Intern - Networking</i>	<b>Jun 2024 – Jul 2024</b> <i>Tiruchirappalli, Tamil Nadu</i>
– 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

<b>LiveSync - Smart Mesh Meet</b>   <i>Node.js, Express.js, MongoDB, Socket.IO, PeerJS</i>	 	<b>Jun 2025 – Aug 2025</b>
– 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.		
<b>ShopSphere - Fashion and Lifestyle Online Store</b>   <i>HTML, CSS, JavaScript</i>	 	<b>May 2025</b>
– 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, PostMan

**Concepts:** Backend Development, REST APIs, API Integration, File & Operating Systems, Data Structures and Algorithms, Security (JWT), Regression, Classification, Neural Networks.

**Competitive Programming:** CodeChef, Codeforces, LeetCode

## Achievements

- Solved 1300+ DSA problems across LeetCode, CodeChef, and Codeforces, demonstrating expertise in algorithms, data structures, and problem-solving.
- LeetCode max rating: 1810 and rated top 7% among all LeetCode users, with a 400+ day daily streak.
- CodeChef max rating: 1623 (3 Star), Global Rank 80 in STARTERS 185 (Div 3).