

# SANJAEY SHUNMUGA SUNDARAM

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## Education

**North Carolina State University, Raleigh, NC**

**Aug 2024 - May 2026**

Master of Computer Science

**GPA : 3.7**

- **Relevant Coursework:** Design and Analysis of Algorithms, Software Engineering, Automated Learning and Data Analysis, Computer Networks, Parallel Systems, Neural Networks, DevOps, Privacy, Cloud Computing

**Sri Venkateswara College of Engineering, Sriperumbudur (Anna University), Chennai, India**

**June 2023**

Bachelors of Computer Science and Engineering,

**CGPA : 9.0/ 10**

## Technical Skills

**Programming Languages:** Python, C, C++, Java, SQL, JavaScript, HTML, CSS

**Developer Tools:** VS Code, Android Studio, Git, VMware, Jira, Jupyter Notebook Docker, Ansible

**Technologies / Frameworks:** Linux, GitHub, Tensorflow, Pandas, Git, MongoDB, Node.js, React.js, MySQL

## Experience

**Machine Learning/ IoT Engineer Intern, Thermelgy (Energy ETA)**

**Aug 2023 - Jan 2024**

- Analyzed chiller and HVAC data from multiple client sites to provide insights and suggest operational strategies for optimal efficiency.
- Focused on developing a machine learning model to automate HVAC systems. Utilised python packages such as **pandas**, **pytorch**, **tensorflow** and also softwares such as **MS Excel**, **Tableau** for analysis.
- Developed a **python script** with universal template to analyze data from all client sites, streamlining **exploratory data analysis (EDA)** and **reducing** analysis and report generation time **by 20%**.
- Developed machine learning models for **predictive maintenance** of IoT devices and implemented comprehensive testing for IoT gateways, focusing on **ESP32 devices**, ensuring continuous data reception from client sites.
- Assisted in developing a web app to access and reset the IoT gateways remotely.
- Provided **technical support** and **troubleshooting** for **3** client sites, ensuring timely issue resolution and maintaining high customer satisfaction
- Played a key role in **project management**, including procurement, logistics, quote generation, and identify key project requirements and estimate costs and duration.

**Research Intern, RBCDSAI IIT-Madras**

**Jan 2023 - July 2024**

- Trained and worked as part of a team developing a **reinforcement learning model** to leverage sensor data and IoT gateways to create a machine learning model aimed at **automating HVAC** operations reducing power consumption, and maintaining optimal thermal comfort. Conducted literature reviews by reading multiple research articles related to the project and presented findings to the team.

## Projects

**Vision Transformer-Based Image Captioning (Python)**

- Trained an image captioning module using **CNN** for feature extraction and **RNN** as decoders on **MS COCO Dataset**, through this we achieved a **BLEU** score of **0.92** and **METEOR** score of **0.90** which is used to validate the caption quality.

**Parallel SUMMA-based Matrix Multiplication (GEMM) – C**

- Optimized distributed matrix multiplication across a  $p \times p$  process grid, implementing **SUMMA** variants in **MPI**, **OpenMP**, and **CUDA** for high-performance computing.
- Gained hands-on experience with **distributed systems** by deploying and benchmarking on **NCSU's ARC** and **Hazel HPC** clusters.

**Expense Management and Analytics App (Track-Ur-Tab)**

- Built a full-stack expense tracking app with **React Native**, **Node.js**, and **MongoDB**, featuring budgeting, goal setting, and shared expense balancing. Led frontend design to deliver a clean, **responsive UI**.

**Check Data Extraction (Cameo Corporate Services Limited)**

- Created a document-processing tool using **AWS Textract API** to extract structured fields from bank checks into **CSV/Excel**, automating financial data workflows.

## Leadership / Extracurricular

- Led a workshop on **Data Analytics** at Sri Venkateswara College of Engineering – Sriperumbudur as a **guest speaker**
- **Senior Executive Member** in SVCE-Cyber Hub (2022 – 2023)