SVSLN Surya Suhas Vaddhiparthy

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Scholar: Citations: 32, H-index: 2 Porfolio : https://vsuhas9.github.io/

Education

- **International Institute of Information Technology** Hyderabad, India
  Masters By Research in Computer Science; GPA: 8.33/10.0 *Aug 2021 - June 2024*
  Courses: Statistical Methods in AI, Optimization Theory, Data Systems, Digital Image Processing, Behavioural Research.
- **Jawaharlal Nehru Technological University (ACEEC)** Hyderabad, India
  B.Tech in Electronics and Communication Engineering; GPA: 8.48/10 (First in class of 120) *Aug 2016 - Sept 2020*
  Courses: Python Programming, R Programming, Database Management Systems, Digital Logic Design.

Skills

- **Languages**: Python, R, Matlab, SQL
- **Databases**: MySQL, Postgres, Redis, HazelCast, MongoDB, MilvusDB, Chroma
- **Tools and Frameworks**: Pytorch, VScode, Pycharm
- **Data Engineering**: Azure, Nginix, Kafka, Docker, Kubernetes, Apache PySpark, LangGraph
- **Data Visualization**: Grafana, matplotlib, seaborn, ggplot2
- **Data Science**: Preprocessing, Data Wrangling, Exploratory Data Analysis, Statistics
- **Machine Learning**: Regression, Classification, Clustering, Time series, Dimensionality Reduction
- **Deep Learning**: LSTM, CNN, Encoder-Decoders, Transformers(Hugging Face), Fine tuning
- **Generative Artificial Intelligence (GenAI)**: , Multimodal Inputs, Document Processing, Prompt Engineering, Query Pre-processing, Retrieval Augmented Generation (RAG), LoRA Finetuning, LLM Design Patterns.
- **AI Engineering**: Agentic LLM Systems, Chain of thought (CoT), ReACT Prompting, LLM Routing, and Tool/Function Calling

Certifications

- **IBM Data Science Specialization** IBM
  Data Science Tools, Visualization, Big Data, Jupyter Notebooks, Machine Learning, APIs. *2020*
- **Natural Language Processing Specialization** DeepLearning.ai
  Sentiment Analysis, Document Processing, Neural Networks, Vector Models, Self-Attention Models, Hidden Markov models. *2023*
- **Introduction to LangGraph** Langchain Academy
  LLM Agents, Parallel LLM Execution, Tool Calling, LLMs with Memory, Session Management, Agentic LLM System *2025*

Experience(3+ years)

- **Junior Data Scientist - LLM Deployment** Hyderabad
  Kshema General Insurance *June 2024 - Present*
  - **Reseacher**: Published a Research Paper at KDD 2025@Canada with the theme of Multi-Agent Enterprise AI System.
  - **LLM Engineer**: Currently working on finetuning and end to end deployment of a private multi-agent LLM micro-service system with tracing for answering customer queries using FastAPI, Ollama, and Langchain, and Langgraph.
  - **Document Processing**: Deployed a Streamlit application to process PDF documents using GOT-OCR-2.0 followed by a latex chunking strategy to store data chunks in Milvus DB.
  - **Computer Vision**: Designed a crop identification pipeline using RCNN, F-RCNN, and YOLOv9.
- **Research Assistant - Dr. Deepak Gangadharan** Hyderabad
  Computer Systems Group (CSG), IIITH *Aug 2021 - June 2024*
  - **UAV Network Security**: Developed efficient security solutions for UAVs using Transformer Models, and Networking
  - **Cloud Computing**: Developed optimization framework for efficient cloud resource allocation for multiple network entities
  - **Computer Vision on Edge**: Designed a lightweight, superpixel algorithm for efficient lane detection in vehicles
  - **Teaching Assistant**: Mentored more than 1000+ students on IoT, Security, and Networking
- **IoT & Data Analytics** Hyderabad
  NSE Talent Sprint *Nov 2021 - Nov 2022*
  - **Data Science**: Achieved 32% improvement in complex IoT and GPS data analysis by leading a team of 8 individuals for building classification and clustering pipelines using K-Means, gradient boosting, and bagging algorithms
  - **Computer Vision**: Achieved a 17% increase in sensor accuracy by using lightweight LSTM and CNN neural network
- **Software & Data Engineer** Hyderabad
  Smart City Living Lab *Sep 2020 - Aug 2021*

- **Data Engineer**: Achieved a 23% reduction in data processing time by developing a custom ETL stack based on Kafka, Elastic Search, and Nginx in collaboration with IISC Bangalore's Engineering team
- **DataWarehouse**: Designed a multi-tenant data warehouse system with indexing to support efficient data retrieval and used custom scripts for monitoring anomalies, incoming load, and server utilization through Grafana visualizations.
- **IoT Software Engineer**: Designed and deployed 35 ESP32-based custom water monitoring devices across IIIT H.

- **Fault Reporting** Hyderabad
  Keolis Hyderabad Metro Rail (KHMRTS) *July 2018 - Sep 2018*
  - **Reporting**: Conducted failure analysis, identified four potential network failures and security vulnerabilities in the Access Control and Intrusion Detection System, and reported insights on fault prevention and control mechanisms.

Publications

- **KshemaGPT: An Multi-Agent LLM System for Enterprises**
  - Skills Used: LLM Optimization, RAG, Tool Calling, Document Processing
  - Accepted at KDD 2025 at Toronto, Canada
- S^2P **: Two-Stage Super-Pixel Algorithm for Enhanced Lane Detection on Edge**
  - Skills Used: Image Processing, Clustering, Lane Detection
  - Presented in SIES 2024 at Hongkong. URL: https://ieeexplore.ieee.org/abstract/document/10767983
- **Attention Meets UAVs: A Comprehensive Evaluation of DDoS Detection in Low-Cost UAVs"**
  - Skills Used: UAVs, Networking, CyberSecurity, Deep Learning, Transformers
  - Presented in IEEE CASE 2024 at Italy. URL: https://ieeexplore.ieee.org/abstract/document/10711508
- **Collision-Aware Data Delivery Framework for Connected Vehicles via Edges**
  - Skills Used: Optimization, Networking, MAC layer, V-IoT
  - Presented in IEEE VTC Fall 2023 at Hong Kong. URL: https://ieeexplore.ieee.org/document/10333507
- **Dynamic Data Delivery Framework to Connected Vehicles via Edge Nodes with Variable Routes**
  - Skills Used: Optimization, Networking, V-IoT
  - Presented in IEEE VTC Fall 2023 at Hong Kong. URL: https://ieeexplore.ieee.org/document/10333633
- **Scalable and Interoperable Distributed Architecture for IoT in Smart Cities**
  - Skills Used: Python, Kafka, Nginix, Django, RedisDB, Linux, Deep Learning.
  - Accepted in IEEE WF-IoT 2023 URL: https://www.techrxiv.org/doi/full/10.36227/techrxiv.24118458.v1
- **A Comprehensive Evaluation on the Impact of Spoofing Scenarios on GPS Sensors in a Low-Cost UAVs**
  - Skills Used: R, Data Visualization, UAVs
  - Presented in IEEE CASE 2023 URL: https://ieeexplore.ieee.org/document/9595057
- **A Multi-Layer Data Platform Architecture for Smart Cities using oneM2M and IUDX**
  - Skills Used: oneM2M, Postgres, MongoDB, Django, APIs, Python, IoT
  - Presented in IEEE WF-IoT 2022 URL: https://ieeexplore.ieee.org/document/10152258
- **Design of an IoT system for machine learning calibrated TDS measurement in Smart Campus**
  - Skills Used: Python, Machine Learning, Data Analysis, IoT
  - Presented in IEEE WF-IoT 2021 URL: https://ieeexplore.ieee.org/document/9595057

Academic Projects

- **DDOS Attack Detection (Machine Learning)**: Developed a lightweight classification algorithm with an accuracy of 95% to classify incoming network packets as Benign or Malicious
  Skills: Support Vector Machine, Decision Tree, Naive Bayes, Adaboost, Ensemble, XGBoost, Keras, sklearn, K-Means, Machine Learning
- **Clinical Text Extraction**: Built NLP Pipeline for stemming lemmatization, tagging, and Named Entity Recognition to analyze patient health records to extract the diseases, dosage, and treatment information.
  Skills: Data Mining, LSTM, GRUs Seq2Seq, NLP, Tensorflow, Parts-of-Speech Tagging.
- **Sentiment Analysis on Movie Reviews**: Implemented sentiment analysis algorithms such as logistic regression, Naive Bayes, and BERT for classifying a sentence as positive or negative sentiment.
  Skills: NLP, Logistic Regression, KNN, Locality hash, Transformers, Encoder-Decoders, T5 + BERT, Word Embeddings, Siamese Networks.
- **Vulnerabilities in Neural Networks**: Achieved 16% improvement in energy demand prediction by analyzing model failures due to noise perturbation in input data through deep and shallow neural networks.
  Skills: Neural Networks, Deep and Shallow Networks, Preventing curse of dimensions, Pytorch.
- **Student Behaviour Analysis**: Conducted survey to analyze the student behavior analysis for assignment submission.
  Skills: Hypothesis Testing, T-test, ANOVA, Regression, Normality test, Gaussian Distribution
- **Security and Energy Aware Task Scheduling in MPSoCs**: Employed techniques from FreeRTOS to design a dual optimal solution which enhances security and energy utilized in a heterogenous MPSoCs, improving the Task Schedulability by 8%.
  Skills: Optimization, Heuristic Development, FreeRTOS, Novelty.

Awards

- Received best student paper award.
- Received gold medal for highest GPA.
- IoT Workshop Winner, IIT Bombay, India.
- Awarded $1M KRW in KETI Hackathon, South Korea.
- Ranked first among 120 students in my Undergraduate batch.

Volunteer Activities

- Worked as class representative during undergraduate
- Conducted technical workshops during undergraduate.
- Mentored quizzes, semester exams for IIIT H undergraduate students

Professional Services

- Peer-reviewed the papers in WF-IoT 2021, and Pattern Recognition Journal
- Special Session Reviewer in IEEE CASE 2024
- Sub Reviewer in IEEE ANTS 2023 & INDICON 2023

Research Interests

Large Language Models	Anomaly Detection	Vehicular Edge Computing	Cyber Security
UAV Systems	Internet of Things	ML and Neural Networks	Cyber-Physical Systems
Data Platform Architectures	Intelligent Systems	Energy Aware Analysis	Image Processing