

# Sai Karthik Nallamothu

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## SKILLS

- **Programming Languages:** Python, C++, Java, JavaScript, SQL
- **Web Technologies:** HTML5, CSS3, React, Node.js, Express.js
- **Database Systems:** MySQL, MongoDB, SQLite
- **Data Science & Machine Learning:** scikit-learn, TensorFlow, Keras, PyTorch, Pandas, NumPy
- **Cloud Technologies:** AWS
- **DevOps & Version Control:** Git, GitHub, Docker, Jenkins
- **Specialized Area:** Machine Learning, Deep Learning, NLP, Time Series Analysis
- **Mathematical & Statistical Tools:** Excel, Statistical Analysis, Probability
- **Other Tools & Technologies:** Jupyter Notebook, VS Code, Postman, Tableau
- **Research Skills:** Literature Review, Data Analysis, Experiment Design, Report Writing, Academic Publishing, Presentation Skills

## EXPERIENCE

- **SRM University AP** 🌐 Aug 2023 – May 2025  
*Research Assistant* On Campus
  - Developed real-time intrusion detection system using Genetic Algorithm for feature selection, achieving 15% higher accuracy than baseline.
  - Designed early autism screening and saffron adulteration detection models with federated learning, ensuring privacy and cross-institution collaboration.
  - Contributed to interdisciplinary AI projects, presenting results at internal research forums.
- **Deakin University (TULIP Lab)** 🌐 Jun 2024 – Sept 2024  
*Research Intern* Virtual
  - Conducted time series anomaly detection using various open source libraries such as PyOD, DeepANT, STUMPY, and scikit-learn.
  - Implemented Isolation Forest, Gaussian Mixture Model, and AutoEncoder with comparative evaluation of their performance.

## EDUCATION

- **University of Central Florida** Aug 2025 – Present  
*M.S. in Computer and Information Sciences* Florida, USA
- **SRM University-AP** Sept 2021 – Jun 2025  
*B.Tech in Computer Science and Engineering (Specialization in AI and ML)* Andhra Pradesh, India
  - Project: *Permutation Effects in Multilingual Summarization using Transformers via Ordered Evaluation*
  - GPA: 9.0 / 10
  - Relevant Coursework: Machine Learning, Data Structures and Algorithms, Operating Systems, Computer Organization and Architecture, Artificial Intelligence

## PROJECTS

- **Adversarial-Resilient ANN for Medical Diagnostics** 2024  
*Tools: Python, TensorFlow, sklearn, deap, skfuzzy, Jupyter Notebook* [🔗]
  - Designed and optimized a deep neural network using genetic algorithms for hyperparameter tuning on a clinical MRI dataset, achieving 94% classification accuracy under noisy conditions.
  - Enhanced model robustness against adversarial and noisy inputs by integrating fuzzy logic, directly applicable to resilient systems in critical infrastructure.
  - Published code and methodology on GitHub for full reproducibility; leveraged modern MLOps practices for model validation and deployment.

• **Machine Learning for Network Intrusion Detection**

2024



Tools: Python, sklearn, seaborn, matplotlib, Jupyter Notebook

- Developed and evaluated ML/DL classifiers (Naive Bayes, Random Forest, MLP) on the KDD'19 network intrusion dataset, achieving top-5% performance in precision and recall.
- Implemented automated feature selection and preprocessing pipelines, reducing false positives by 18% and improving detection of novel attack patterns.
- Open-sourced analysis toolkit; documented methodology for security operations center (SOC) and industrial control system (ICS) applications.

**PATENTS AND PUBLICATIONS**

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [C.1] **Application of Machine Learning Algorithms and Feature Selection using Genetic Algorithm: A Case Study on Cyber Attack Detection.** In *Proceedings of the 9th International Conference on Innovations in Information and Communication Technology (I2CT)*, 2024.
- [C.2] **Comparative Analysis of Feature Representations for Topic Modeling with Latent Dirichlet Allocation.** In *Proceedings of the 15th International Conference on Computing, Communication and Networking Technologies (ICCCNT)*, IIT Mandi, 2024.
- [C.3] **Early Childhood Autism Screening Through Facial Feature Extraction.** In *Proceedings of the 8th International Conference on Parallel, Distributed and Grid Computing (PDGC)*, 2024.
- [C.4] **Assessment of Data Augmentation Paradigms in Pathology Identification.** In *Proceedings of the 22nd International Conference on Information Technology (OCIT)*, 2024.
- [P.1] **A System for Autism Spectrum Disorder Detection.** Patent Office of India, Patent ID: 20244105350. Publication Date: 2024.
- [P.2] **A System and Method for Detecting Adulteration in Saffron using Federated Learning.** Patent Office of India, Patent ID: 202441074334. Publication Date: 2024.

**CERTIFICATIONS**

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| • Database Management System – IIT Kharagpur (NPTEL)   | Sep 2023 |
| • Data Analytics Essentials – Cisco Networking Academy | Jul 2023 |

**EXTRACURRICULARS AND ACHIEVEMENTS**

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|---|------------|
| • <b>Gold Medal – 9th Research Day</b><br>SRM University – AP                                       | April 2025 |
| ◦ Awarded for outstanding undergraduate research in Multilingual based Hybrid summarization.        |            |
| ◦ Recognized for technical innovation and practical impact in academic research.                    |            |
| • <b>Travel Grant &amp; Patent Grant Recipient</b><br>SRM University – AP                           | April 2024 |
| ◦ Secured institutional funding to present research at international conferences and file a patent. |            |
| ◦ Encouraged for academic excellence, innovation, and research dissemination.                       |            |

**REFERENCES**

- Dr. Tapas Kumar Mishra**  
Assistant Professor, Department of Computer Science and Engineering  
SRM University – AP  
Email: tapas.m@srmap.edu.in  
Relationship: Undergraduate Project Advisor and Research Guide
- Prof. Nitul Dutta**  
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Relationship: Research Collaborator and Mentor