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, HuggingFace
- **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, Applied Data Science, Artificial Intelligence

Projects

- **Adversarial-Resilient ANN for Medical Diagnostics** *2024*
  Tools: Python, TensorFlow, sklearn, deap, skfuzzy, Jupyter Notebook [GitHub]
  - 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 [GitHub]
  - 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] **System And Method For Decentralized Predictive Analysis With Enhanced Interpretability And Privacy"**. Patent Office of India, Patent ID: 202541004267. Publication Date: 2025.

[P.2] **A System and Method for Detecting Adulteration in Saffron using Federated Learning**. Patent Office of India, Patent ID: 202441074334. Publication Date: 2024.

[S.1] **PEMSTOE: Permutation Effects in Multilingual Summarization using Transformers via Ordered Evaluation**. *SN Computer Science (Communicated)*,

[S.2] **RaMToE-FINE: Randomized Multilingual Training with Ordered Evaluation via Fine-Tuning and Incremental Data Expansion**. *(Communicated)*, 2025.

Certifications

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

Extracurriculars and Achievements

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

References

1. **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
2. **Prof. Nitul Dutta**
   Professor, Department of Artificial Intelligence and Data Science
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   Email: nituldutta@gmail.com
   Relationship: Project Supervisor and Academic Mentor
3. **Prof. George Ghinea**
   Professor, College of Engineering, Design and Physical Sciences
   Brunel University London
   Email: george.ghinea@brunel.ac.uk
   Relationship: Research Collaborator and Mentor