Manas Sanjay Pakalapati

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Education

- **University of South Florida** — Tampa, Florida
  Master of Science with Thesis - *Computer Science; GPA 3.57* — *August 2022 - August 2024*
- **Indian Institute of Technology Palakkad** — Kerala, India
  Bachelor of Technology - *Computer Science and Engineering; GPA: 6.84* — *July 2017 - April 2021*

Skills Summary

- **Languages**: Python, Java, C++, C#, Javascript, SQL, R, CSS, Nodejs, React
- **Tools**: Visual Studio, GIT, Jupyter, Tableau, PowerBI, JIRA, Docker
- **Databases**: Vector, PineCone, Knowledge Graphs, SQL Server Management Studio, PostgreSQL, MongoDB, MYSQL
- **Libraries**: Pandas, Numpy, Keras, Scikit-learn, TensorFlow, OpenCV, PyTorch
- **Cloud**: Google Cloud Platform, AWS(S3, EC2, RDS, Lambda, Sagemaker), Microsoft Azure, Snowflake
- **AI**: LangChain, LiteLLM, CrewAI, AutoGen, OpenAI SDK, Google ADK, Anthropic, Ollama, TogetherAI

Experience

- **Senior Research Engineer** — Florida
  Actualization.AI, Tampa — *September 2024 - Present*
  - **Agentic Systems & Automation:**: Built multi-agent pipelines using **LangChain, CrewAI, and MCP**, automating document QA & database triage, cutting manual processing **80%** and boosting throughput **2.5x**
  - **LLM Security & Red Teaming**: Developed adversarial testing frameworks (**hallucinations, prompt injection, data leakage**), uncovering **40+** failure modes and expanding test coverage by **60%.**
  - **RAG Hallucination Evaluation**: Designed **hallucination-generation** + risk-analysis tools for **RAG** pipelines, improving detection accuracy 95% across PDF/CSV evaluations.
  - **Contract AI Pipelines**: Engineered **LLM**-based compliance & risk-analysis system for **100+** page contracts (**AWS Textract + OpenAI/Anthropic APIs**), cutting review effort **70%** and reducing runtime **60 min → 3 min** via **AWS Lambda parallelization (20x speedup)**
- **Research Engineer** — Florida
  University of South Florida, Tampa — *December 2022 - August 2024*
  - **Model Development - (Python)**: Designed and developed a **novel CNN architecture** for a **Generative AI** model to synthesize privacy-preserving **synthetic faces**, achieving **99%** privacy while retaining key identity features.
  - **Algorithm Development - (Python)**: Designed **custom data augmentation** techniques, eliminating **90%** of the **YOLOv5** pre-augmentation performance drop-off, enabling efficient processing without sacrificing model accuracy.
- **MLOps Engineer** — India
  R Systems, Greater Noida — *July 2021 - May 2022*
  - **Model Integration**: Led the development of a **YOLOv5**-based object segmentation system with **OpenCV**, automating inventory updates via camera recognition. Reduced manual entry by **80**% and improved accuracy by **30**%.
  - **Efficient Model Deployment**: Deployed machine learning models using **Docker** and **Kubernetes** on **AWS**, reducing deployment times by **30**% and improving system scalability.
  - **Streamlined Data Pipelines**: Utilized **AWS** services such as **S3**, **EC2**, and **SageMaker** to streamline model training and deployment, reducing cloud costs by **20%**.
- **Machine Learning Research Assistant** — India
  MLG Lab, Palakkad — *January 2020 - July 2021*
  - **ML for Intelligent Tutoring Systems - (Python, Java)**: Integrated **Decision Trees** and **SVMs** into a Cognitive Tutor app to autonomously learn and calibrate production rules, reducing manual rule creation by **90%**.
  - **Environmental Monitoring - (Python)**: Utilized **K-Means, DBSCAN,** and **Hierarchical Clustering** to analyze sensor data from environmental monitoring stations, improving pollutant source detection accuracy by **25%**.
- **Data Analyst** — Bangalore, India
  Timken Engineering And Research India Pvt Ltd — *May 2019 - July 2019*
  - **Lubrication Tool - (Tableau, PowerBI)**: Created and monitored Key Performance Indicators (**KPIs**) for mechanical parts data, building interactive dashboards in **Tableau** and **PowerBI** that reduced report generation time by **40**%.
  - **SP Upgrades - (SQL, SSMS)**: "Optimized data management and querying of extensive datasets using **SQL Server Management Studio** and **PostgreSQL**, implementing stored procedures that boosted data retrieval speed and efficiency by **25**%.

Published Papers

- M. S. Pakalapati, D. B. Goldgof, L. Hall and G. Zamzmi, "Anonymized Identity Tracking: Privacy Preserving Facial Encoding," 2024 IEEE 37th International Symposium on Computer-Based Medical Systems (CBMS), Guadalajara, Mexico, 2024, pp. 89-93, doi: 10.1109/CBMS61543.2024.00023. Paper Link
- 1. Pakalapati MS. Anonymized identity recognition and classification using privacy preserving facial encoding. [Order No. 31333507]. University of South Florida; 2024. Link