

# SANJITH KUMAR R

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## EXPERIENCE

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### Research Scientist - AI

July 2025 – Present

*Authenta*

*Chennai, India*

- Developed and implemented state-of-the-art deep learning models for e-KYC systems, focusing on face forgery and deepfake detection to enhance fraud prevention.
- Designed a robust, reusable framework for training, testing, and deploying models, significantly accelerating development cycles and improving testing efficiency.
- Fine-tuned multimedia manipulation detection models using custom and public datasets, achieving substantial reductions in false negative rates.
- Advanced model interpretability and explainability by applying techniques such as Layer-wise Relevance Propagation (LRP) and Grad-CAM, ensuring clear client-side understanding of model predictions.
- Researched and implemented more than 30+ existing papers and testing them across predefined metrics and benchmarks.
- Developed a python package for video identity management and clustering and storing data for streaming (identity-clustering)
- **Technical Skills:** Python, PyTorch, Computer Vision, Media Forensics, JAX, Stats.

### Research Intern

Nov 2024 – June 2025

*Authenta*

*Chennai, India*

- Conducted research on deepfake detection, implementing and optimizing GenConViT, DistillDIRE, and TimeSformer models using TensorRT for identity validation, achieving a 15-40% boost in accuracy over baselines.
- Developed segmentation and feature extraction models for manipulated images using ResNet18, detecting Areas of Manipulation (AOM) with 90% precision across 1,000+ test samples.
- Trained and fine-tuned 5+ AI models, leveraging WandB to monitor performance, reducing overfitting by 10% through iterative experimentation.
- Designed the AI component of an MVP using Size-Invariant TimeSformer, enabling robust identity validation for real-world video datasets.
- Created data pipelines to process and tag raw video data, stored in AWS S3 and MongoDB.
- **Skills:** Python, PyTorch, Computer Vision, Image Processing, AWS S3/EC2, MongoDB, WandB, TensorRT.

## SKILLS

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### Technologies

Deep Learning, Data Science, Computer Vision, NLP, SDE, LLMs

### Programming Languages

Python, Bash, C++

### Frameworks

PyTorch, WandB, TensorRT, JAX, FastAPI

### Languages

English, Japanese, Tamil

## PROJECTS

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### MiniTorch

- Revisiting Deep learning from scratch and implementing early papers.
- Building everyday, adding new layers, losses, optimizers, manual backprop, and visualization.
- Adding Interpretability for every layer ops.
- **Tech Stack:** Python, Pytorch, JAX, Math, and Stats.

## EasyML

- Built a user-friendly Digital Agent designed to automate the entire machine learning workflow, including data processing, model training, and deployment.
- Created modular data and training pipelines, enabling flexible, reusable, and scalable ML processes.
- Implemented RESTful APIs for seamless server communication, leveraging Docker for containerization and Apache Kafka for inter-service communication.
- **Tech Stack:** Python, Docker, MySQL, Redis, FastAPI, Scikit-Learn, Kafka, LLMs.

## PUBLICATIONS

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### **GridStemLayNet: A Document Layout Understanding model**

Researched and co-authored *GridStemLayNet*, a novel vision transformer model with Stem Attention for Document Layout Analysis, improving layout recognition accuracy by 15% across FUNSD, PubLayNET, and DTFiL datasets; published at IEEE CINS 2024 @Dubai.

## EDUCATION

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**B.Tech Artificial Intelligence and Data Science**, St. Joseph's Institute of Technology CGPA: 8.85 2021 - 2025  
Relevant Coursework: Machine Learning, Artificial Intelligence I, Data Science, Big Data Analytics, Deep Learning, Image and Video Analytics.

## LEADERSHIP

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**GDSC AI/ML and Cloud Lead**  
**Japanese Language Instructor**

Built a community of developers in the campus, and guided effective projects.  
Trained 35 students for JLPT N5 examinations.