Akhil Theerthala

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Summary

Applied Scientist with current research interests in advancing domain-specific reasoning and interactive decision-support systems. Open-source contributor with **33,000+ model family downloads** (Kuvera) and a **Global Reasoning Challenge Winner**. Proven industry impact: achieved **97.5% latency reduction** in document processing and **27.6% accuracy boost** in table detection.

Professional Experience

Senior Member Data Scientist | *Perfios Software Solutions*   Apr 2025 – Present

- Established a new baseline TEDS score of **0.85** on complex financial layouts by adapting open-weight VLMs (PaliGemma2) via Low-Rank Adaptation (LoRA) on domain-specific datasets.
- Architected multi-stage agentic reasoning workflows using Google-ADK for underwriting, customer retention risk and claim summarization for new product lines.
- Developed a Reference-Free algorithm to quantify document legibility, utilizing a regressive Vision Transformer (ViT). Filtered low-fidelity inputs with **92% precision**, preventing downstream hallucination and reducing compute costs.

Member Data Scientist | *Perfios Software Solutions*   Jun 2023 – Apr 2025

- Resolved inference latency bottlenecks ($8s \rightarrow 200ms$) by compressing a large multimodal classifier into a lightweight student architecture via Distillation and quantization techniques, preserving statistical parity in F1-scores.
- Boosted generalized table detection accuracy by **27.6%** through the careful, semi-synthetic data curation for finetuning model and rigorous evaluation of YOLOv8 models.
- Augmented vision-only Table Structure Recognition (TSR) systems with a semantic row-detection module. Fine-tuned specialized text-encoders to capture lexical dependencies in bank-statements, with real-time inference (**<40ms**).

Additional Experience

Research Volunteer | *Financial Services Innovation Lab, GeorgiaTech*   Aug 2025 – Present
(External Collaborator)

- **AAAI 2026 Acceptance:** Co-authored FinForge,a semi-synthetic benchmark generation pipeline for financial tasks. (Accepted at AAAI Workshop on Agentic AI).
- **Resaerch Focus:** Contributing to the **FinGT (Financial Generative Transformers)** project, focusing on enhancing financial domain adaptation and logic adherence in LLMs.

Open Source Contributor | *Hugging Science (AI-for-Food-Allergies)*   Oct 2025 - Nov 2025

- Curated high-quality public datasets for food allergy detection to support AI safety in health domains.
- Engineered an interactive **Dataset Explorer**, enabling the research community to easily visualize and analyze allergy data distributions.

Project Experience

Reasoning Dataset Creation Challenge (Global Competition)   Winner - 1st Place

- Secured **1st place globally** against 150+ teams in a challenge hosted by HuggingFace, Together.ai, and Bespoke Labs to create synthetic reasoning datasets.
- Designed a novel data synthesis pipeline to generate complex logical reasoning chains, demonstrating superior performance in training Small Language Models (SLMs).

Kuvera: A Data-Centric Personal Finance LLM & Dataset   HuggingFace Dataset

- Engineered a cost-effective data generation pipeline to fine-tune 8B/14B parameter LLMs (Llama/Mistral) for personal finance.
- Optimized models for efficient single-GPU deployment using LoRA/Quantization, driving **31,000+** ecosystem downloads (via community GGUF adaptations) and **700+** base model downloads.

PaperStack - A Research Paper Reading Assistant   HuggingFace Space
- Architected a research dashboard that transforms PDF manuscripts into interactive, modular summaries, enhancing information retrieval speed.
- Implemented a **tiered inference architecture**: enables dynamic switching between a low-latency "Fast Mode" (for rapid screening) and a "Deep Analysis" mode (for comprehensive summarization / context-heavy query resolution), optimizing user cost-performance ratios.

Causal Analysis of Social Media Signals on Crowdfunding Success   GitHub
- Designed a multi-stage experimental framework to decouple the impact of social engagement metrics from fundamental content features on funding rates.
- Conducted stepwise ablation studies to quantify the marginal lift of social signals, demonstrating that content features drive success independently of engagement metrics.

Education

Indian Institute of Technology, Kharagpur   Aug 2019 – May 2023
B. Tech, Aerospace Engineering

Relevant Coursework:
- Graphical & Generative Modelling for ML
- Dependable & Secure AI-ML
- Linear Algebra for AI and ML
- Theories of Language Comprehension
- Machine Learning Foundations
- Financial Analytics

Publications

G. Matlin, **A. Theerthala**, et al. (2025). **FinForge: A Semi-Synthetic Benchmark Generation Framework for Finance.**
Agentic AI in Financial Services, AAAI 2026.

A. Theerthala (2025). **A Data-Centric Framework for Training Behaviour-Aware Personal Finance Language Models.**
FinNLP Workshop at EMNLP.

Certifications

- **The Reasoning Course** (*Hugging Face*) – *Building reason-capable AI models (2025)*
- **Generative AI with LLMs** (*DeepLearning.AI*) – *Advanced LLM training & deployment (2025)*
- **Generative AI Nanodegree** (*Udacity*) – *Comprehensive GenAI pipeline*
- **Machine Learning in Production** (*Coursera*) – *MLOps & System Design*
- **Deep Learning Specialization** (*DeepLearning.AI*) – *The core neural networks curriculum*

Skills

NLP & LLMs: HuggingFace (Transformers, TRL, PEFT/LoRA), LangChain, vLLM, Prompt Engineering
Deep Learning & ML: PyTorch, TensorFlow, Scikit-learn, OpenCV, NLTK, NumPy, Pandas
Developer Tools & MLOps: Docker, Git, Linux
Visualization: Matplotlib, Seaborn, Plotly, Gradio/Streamlit