# VEERARAJU ELLURU

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## EDUCATION

**Indian Institute of Technology, Jodhpur** **Expected: May 2026**
Bachelor of Technology in Computer Science and Engineering CGPA: 9.27/10

## RELEVANT COURSEWORK

Linear Algebra, Probability, Statistics & Stochastic Processes, Design & Analysis of Algorithms, Pattern Recognition & Machine Learning, Deep Learning, Natural Language Understanding, Computer Vision, Foundation Models & GenAI

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## PUBLICATIONS

- Sai Siddhartha Chary Aylapuram, **Veeraraju Elluru**, and Shivang Agarwal. *Bias-aware machine unlearning: Towards fairer vision models via controllable forgetting.* In **2nd Workshop and Challenge on Unlearning and Model Editing, ICCV, 2025**. URL.
- Manikandan Ravikiran, **Veeraraju Elluru**, Karrtik Iyer, Prasanna Pendse, and Shayan Mohanty. *Lie algebra-based semantic flow for incompleteness detection in summarization.* In **PRICAI-PKAW, 2025**. URL
- **Veeraraju Elluru**, Shreyansh Pathak, Shivang Agarwal, Mayank Vatsa, and Richa Singh. *Sparse Autoencoder-guided Audio Unlearning.* **Transactions in Biometrics Behavior, and Identity Science, 2025. Under review.**
- **Veeraraju Elluru**, Ahmad Sallam, Anderson Alves, and Tiago Bresolin. 38. *Towards unsupervised latent representations for cattle image segmentation.* **Animal - Science proceedings, 16:560–562, 10 2025**. doi: 10.1016/j.anscip.2025.08.193.
- **Veeraraju Elluru,** Manikandan Ravikiran, and Karrtik Iyer. IC-unisumeval: *A novel article-summary keyfact pair dataset for fine-grained incompleteness evaluation in textual summaries.* 2025. **Nature Scientific Data, Under Review.**

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## RESEARCH EXPERIENCE

**Research Intern,** TAILS, Thoughtworks, Chicago, IL (Remote) **Summer 2025**

- **First** intern cohort for Thoughtworks AI Labs (**TAILS**). Research on the **Fine-grained Incompleteness Evaluation** of Textual **Summarization** tasks across Small and Large Language Models.
- Co-development and evaluation of **Self-Attention via Lie-Algebraic Flows** for textual summarization.
- Representative works accepted at **PRICAI** and submitted to **Nature Scientific Data**.

**Research Assistant,** Image Analytics and Biometrics Lab, CSE Dept, IITJ **Nov. 2024 - Present**
**Advisors: Dr. Mayank Vatsa and Dr. Shivang Agarwal**

- Research on privacy-respecting, safe, and interpretable AI systems.
- Representative works accepted to **ICCV-W** and submitted to T-BIOM.

**Research Intern (REU),** CDA, University of Illinois Urbana-Champaign, Champaign, IL **Summer 2024**
**Advisor: Dr. Tiago Bresolin**

- **Developed Foundation Models** for Livestock Image Segmentation pipelines leveraging self-supervised, non-contrastive learning algorithms like Bootstrap Your Own Latent. Generated robust and precise cattle masks for large-scale **out-of-distribution** datasets via Supervised Fine-Tuning.
- Achieved **SoTA** on the data-specific segmentation - a **6%** improvement in mean Jaccard scores on large-scale cross-species datasets, at **only 2-5% labeled data** during SFT, hence debunking Supervised algorithms.
- Extended abstract published in the Animal Science Proceedings.

## PROFESSIONAL EXPERIENCE

**Machine Learning and Data Analyst Intern,** Fluxgen Technologies, Bengaluru, IN **Summer 2023**

- **Optimized** raw data from a live dashboard for analysis, enabling EDA and model training.
- Improved **anomaly detection accuracy** using unsupervised algorithms - **Isolation Forest** and **OC-SVM.**
- **Developed** data-driven water-level optimization insights, influencing **Tata Steel** amongst other clients.
- Water consumption was optimized by **14%** month-over-month at 3 steel plants using the above analyses.

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## PROJECTS

**"Fantastic Biases and Where to Find Them" |** GitHub **Nov. 2025**

- Applied **mechanistic interpretability** (linear probing, activation and attribution patching, automated circuit discovery) to locate **gender and racial bias** in OSS models (GPT2-medium, large, GPT-Neo) to identify *sparse* circuits responsible for biased representations.
- Utilized **TransformerLens** framework to trace information flow across Multihead Attention Heads and MLP layers to output logits on StereoSet and WinoGender datasets.
- Performed activation engineering-based **steering** including additive, projective and SAE-based steering to surgically **mitigate bias** by up to **40%** in the residual streams of models at **inference-time**., without degrading MMLU scores (<2%)

**Multi-view 3D scene reconstruction,** Course: Computer Vision | GitHub / HF **Apr. 2025**

- **Evaluated** multiple scene-reconstruction methods such as NeRFs, GANs, Gaussian Splattings, and classical Structure-from-Motion (SfM) and Multi-view Stereo (MVS) techniques.
- **Benchmarked** above models across a plethora of 2D-3D datasets to illustrate the best performance.
- Deployed a **front-end** application using Streamlit to support easy tinkering.

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## ACHIEVEMENTS

***Ranked*** top-8 / 105 in the Computer Science Department **2022-Present**
Selected to attend the annual ***Microsoft Research India Academic Summit*** **June 2025**
Amongst **Top-50 Research Proposals** at the national-level, annual ***ResCon, IIT Bombay Techfest*** **2024**

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## LEADERSHIP & VOLUNTEER EXPERIENCE

**Introduction to Machine Learning Teaching Assistant**, IITJ CSE Dept. **Fall 2025**

- Weekly contributions to the problem list, office hours for tutoring , weekly labs, and project mentoring sessions

**Introduction to Computer Science Teaching Assistant**, IITJ CSE Dept. **Spring 2025**

- Weekly contributions to the problem list, conducted weekly labs, and office hours for tutoring sessions

**Volunteer**, Ashoka Trust for Research in Ecology and the Environment (ATREE) **Summer 2025**

- Built a computer vision module integrated into the Plants of India initiative, digitizing and organizing 100K+ ecological images and enabling researchers for sub-second semantic image retrieval benefitting scientists save on hours-long manual search
- Established the foundational infrastructure for hierarchical image classification and cross-institutional knowledge sharing, making tagged images portable and searchable across organizations, accelerating ATREE's evidence-based conservation efforts and enabling faster insights, policy actions, and ecosystem interventions

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## SKILLS

**Languages:** Python, C, C++ | SQL | HTML, CSS, JavaScript
**Frameworks and Tools:** PyTorch | Django | AWS | Git, Bash
**Deep Learning:** HuggingFace, wandb, ollama, unsloth, multi-gpu training