

Jayadratha Gayen

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Education

International Institute of Information Technology, Hyderabad

July 2022 - Present

MS by Research, Machine Learning Lab (MLL)

CGPA: 8.29/10

Relevant Coursework: Topics in Deep Learning, Computer Vision, Statistical Methods in AI, Applied Optimization

Indian Institute of Engineering Science and Technology, Shibpur

July 2014 - June 2018

B.Tech in Electrical Engineering

CGPA: 8.02/10

Relevant Coursework: Engineering Mathematics, Digital Signal Processing, Control Systems, Programming

Publications

- **Predict Confidently, Predict Right: Abstention in Dynamic Graph Learning** [arXiv](#) TGL@KDD'25, ASONAM'25
Developed a model integrating a reject option into **continuous-time dynamic graph networks** (CTDGs) for link prediction and node classification tasks in **highly imbalanced datasets**. The model abstains from predictions under high uncertainty, improving reliability and reducing critical misclassification. Extensive evaluation on 6 datasets showed **10-15% improvement** in AUC/AP scores and better handling of class imbalance.
- **Node Classification With Reject Option** [arXiv](#) DAI@AAAI'25, TMLR'25
Developed NodeCwR, a novel GNN framework using both cost-based and coverage-based rejection strategies, **improving model reliability for the Legal Judgment Prediction** (LJP) task. Utilized Graph Attention Network (GAT) to process node embeddings and **interpret rejection cases** with SHAP visualizations. Achieved up to a **6-19% increase** in prediction accuracy on the ILDC dataset by abstaining from uncertain cases, leading to more reliable LJP.

Project Work

- **Nyay Saheli: Conversational Hybrid RAG for Indian Women** 2025
Developed a **multilingual conversational AI assistant** using Retrieval-Augmented Generation (RAG) to provide **empathetic legal guidance** to Indian women across diverse communities. The system integrates **multilingual NLP** for culturally sensitive responses, enabling accurate information delivery on women's rights and safety. Designed to handle **complex legal queries** while maintaining an empathetic and context-aware conversational tone.
- **3D Motion Transfer Across Diverse Character Topologies** 2023
Developed a novel method using Graph Convolution Networks (GCN) for realistic **3D motion transfer between diverse character topologies**, including humanoids and quadrupeds. By incorporating prior frame encodings, the approach **reduces jitter and ensures smoother**, more natural animations. The method outperforms traditional pose transfer techniques, especially on complex characters, as shown on the Mixamo dataset.
- **Multilingual News Article Similarity Detection Using Siamese Networks and DistilBERT** 2022
Developed a multilingual news article similarity detection system using a Siamese architecture. Three models were implemented: TF-IDF with MLP, GloVe with LSTM, and multilingual DistilBERT, achieving the best result with **DistilBERT (PCC: 0.5683)**. The system successfully handles cross-linguistic news comparison and outperforms baseline models in SemEval 2022 Task 8.

Skills

Python, C/C++, Git, SQL, PyTorch, PyG, scikit-learn, Tensorflow, Keras, GitHub, Blender, MeshLab, Excel, Minitab

Work Experience

Google Summer of Code at INCF

May 2025 - Sep 2025

Open Source Developer, Project: DevoTG: Dynamic GNNs for Modeling C. elegans Development.

- Modeled **C. elegans embryogenesis** and **connectome formation** using temporal graph methods.
- Designed **spatiotemporal graph models** for cell division and neuronal network evolution.
- Developed **TGN-based models** and **3D interactive visualizations** for predictive analysis.

Vikram Solar Limited

July 2018 - Dec 2019

Engineer

- Contributed to a **Six Sigma project** on **rolled throughput improvement**, achieving a **10% production increase** through **bottleneck analysis**, DOE in Minitab, and quality tools (Pareto, Five Why, Fishbone).
- Implemented **RFID tag automation** and led **KAIZEN initiatives**, reducing manual errors in data management (SAP/Excel) and cutting **power consumption by 2%**.

Extra-Curriculars

- **Teaching Assistant, 3D Vision Summer School:** Conducted tutorials and doubt solving sessions in 3D vision concepts for participants in 3D Vision Summer School held at CVIT, IIIT Hyderabad. *(May 2023)*
- **Program Coordinator, Executive Training Program on AIML:** Coordinated and conducted tutorials in two-week executive training program on Artificial Intelligence and Machine Learning by ihub-data, IIIT Hyderabad. *(Oct 2023)*
- **Founding Member, Srijani - The Hope:** Co-founded an independent non-profit organization focused on improving education and healthcare in remote areas with limited accessibility. *(Mar 2020- Apr 2022)*
- **Summer School Participation:** Attended 8th summer school on AI at IIIT Hyderabad. *(July 2024)*
- **BharatGen Hackathon:** National Finalist (top 6/275+ teams), Designed *Nyay Saheli*, a GenAI-powered multilingual chatbot offering personalized legal guidance for Indian women. *(Apr-June 2025)*