Tathagat Verma

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EDUCATION

Stanford University, Stanford, USA　　　　　　　　　　　　　　　Sep 2022 - Mar 2024 (expected)
Master of Science in Computer Science, Specialization - Artificial Intelligence　　　　GPA - **3.97/4**

Indian Institute of Technology Bombay, Mumbai, India　　　　　　　　　Jul 2018 - Dec 2021
Bachelor of Technology in Computer Science and Engineering with Honors　　　　CPI - **9.64/10**

PUBLICATIONS

1. **VarScene: A Deep Generative Model for Realistic Scene Graph Synthesis**　　**ICML 2022**
   Tathagat Verma, Abir De, Yateesh Agrawal, Vishwa Vinay, Soumen Chakrabarti

RESEARCH EXPERIENCE

Automated Process Mining with VLMs　　　　　　　　　　　　　　*Winter 2024 (ongoing)*
Guide: Prof. Chris Ré | R&D Project　　　　　　　　　　　*Hazy Research, Stanford University*
- Developing a dataset and benchmark for automatically documenting workflows in the WebArena environment

Object Importance Classification and Natural Language Explanation Generation　　*Autumn 2022*
Guides: Prof. Mykel Kochenderfer, Jiachen Li | Research Assistantship　　　*SISL, Stanford University*
- Developed a deep learning model for importance classification and explanation generation in autonomous driving
- Utilized **CNN**, **Graph Neural Networks** and **attention** based **GRU** for image feature extraction, learning inter-object relationships and natural language generation respectively for the joint task in **PyTorch**

VarScene: A Deep Generative Model for Realistic Scene Graph Synthesis　　　*Autumn 2021*
Guides: Prof. Soumen Chakrabarti, Prof. Abir De | R&D Project　　　　　　*InfoLab, IIT Bombay*
- Developed a deep generative model for novel scene graph synthesis using **VAE** and **Graph Neural Networks**
- Designed a goal oriented decoder for minimizing the maximum mean discrepancy between graph distributions

Deep Learning for Medical Image Quality Enhancement　　　　*Spring 2021, Autumn 2021*
Guide: Prof. Suyash Awate | R&D Project, Bachelor's Thesis Project　　　　　　　*IIT Bombay*
- Enhanced the quality of MRI images with sub-sampling and Gaussian noise in the frequency domain and PET images with Poisson noise under the weakly-supervised regime using **RED-CNN** and **UNet** architectures

INTERNSHIPS & PROJECTS

Bad Label Detection　　　　　　　　　　　　　　　　　　　　　　*Summer 2023*
Scale AI | Machine Learning Research Engineer Intern　　　　　　　　　*San Francisco, USA*
- Developed a bad label detection framework to identify mislabeled data points for IG reel genre classification
- Finetuned **multimodal video classification models** for bad label detection, getting **6%** labeling cost reduction

Image Functionality in the Whiteboard Android Application　　　　　　*Summer 2021*
Microsoft India (R&D) Pvt. Ltd. | Software Engineer Intern　　　　　　　　　*Noida, India*
- Integrated **Microsoft Lens SDK** into Whiteboard Android, to support image and OCR tools provided by Lens
- Worked in **Java Android** backend, building the bridge to send images from native Android to the web application

Attribute Value Extraction from Product Descriptions　　　　　　　　*Summer 2020*
Coupa Software India Pvt. Ltd. | Data Science Intern　　　　　　　　　　　*Pune, India*
- Developed unsupervised and semi-supervised methods for extracting attribute values from product descriptions
- Implemented an **RNN** model for sequence tagging using **CRF**, **BiLSTM** and attention mechanisms

Mitigating Scams and Catfishing on Dating Apps through Automatic Moderation　　*Spring 2023*
Guide: Alex Stamos | Trust and Safety Engineering | Demo　　　　　　　　*Course Project*
- Developed a **Discord bot** with user-reporting and moderation workflows on a dating app simulation in Discord
- Leveraged **regex, image-captioning** and **GPT-3.5** to handle automated flagging and prevent adversarial cases

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 53** in **JEE Advanced** out of 200,000 candidates　　　　　*2018*
- Secured **All India Rank 34** in **JEE Main** out of 1.2 million candidates　　　　　　*2018*
- Amongst top **30** in India selected for the **International Astronomy Olympiad** Selection Camp　*2018*
- Amongst top **35** in India selected for the **International Mathematical Olympiad** Training Camp　*2017*

LEADERSHIP POSITIONS

IIT Bombay
Student Mentorship Program | Mentored 12 freshmen and 8 CS sophomores　　*Jul 2020 - May 2022*
Teaching Assistant | AI and ML; Data Structures and Algorithms; Logic for CS　　*Jul 2020 - Nov 2021*

Stanford University
Teaching Assistant | Machine Programming *CS 329M*; NLP with Deep Learning *CS 224n*;
Design and Analysis of Algorithms *CS 161*　　　　　　　　　　　　　　*Jan 2023 - ongoing*