

Danishjeet Singh

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Education

Indiana University, Bloomington

B.S. in Computer Science | 3.677 GPA

Minor: Data Science & Statistics

Bloomington, IN

May 2025

Skills

Programming Languages and Databases: Python(OpenCV, dlib, PyTorch, Pandas, NumPy, scikit-learn, matplotlib), JavaScript, TypeScript, Next.js, React, Node.js, SQL, Postgres, MongoDB, R, Java, C++, HTML, CSS(Tailwind, Bootstrap), AWS, GCP

Tools: Tableau, Docker, JIRA, Git/Terminal, Linux, HPC, Latex

Experience

Observatory on Social Media, Indiana University

Research Assistant

Bloomington, IN

January 2023 - Present

- Advised by *Filippo Menczer* and mentored by *Kai-Cheng Yang*
- Setup a robust image ranking pipeline to detect AI usage on the Twitter platform to significantly reduce the complexities faced by researchers to identify malicious actors on social media platforms.
- Mentored 6 graduate students in developing various deep learning-based approaches to classify AI-generated faces among human faces by utilizing advanced architectures like ResNet, Xception net and Ensemble learning.

IU Computer Vision Lab, Indiana University

Research Assistant

Bloomington, IN

May 2022 - January 2023

- Advised by *David Crandall*
- Implemented Generative AI models such as Image Diffusion Models(conditional and unconditional), Generative Adversarial Networks to generate novel and creative samples for image datasets.
- Applying various dimensionality reduction techniques to analyze the relationship between the size of training datasets and the performance of classifiers, using visualizations to facilitate understanding

Publications

Characteristics and prevalence of fake social media profiles with AI-generated faces

- <https://arxiv.org/pdf/2401.02627.pdf>
- Developed a machine learning-based heuristic to detect Generative AI usage on the Twitter/X platform signaling 10k daily active users.
- Analyzed 1,353 Twitter(X) accounts using AI-generated faces, exposing their involvement in scams and spam.
- Paper featured at IEEE Spectrum <https://spectrum.ieee.org/ai-detection>

Projects

Denosing Diffusion models(singhdan.me/diffusion)

- Trained a unconditional diffusion model from scratch to generate novel landscape images
- Devised 4 label based conditional diffusion models tweaked by Exponential Moving Average and Classifier free Guidance to visualise and understand the various improvements achieved over standard diffusion models
- Used the CIFAR-10 dataset to create a Attention based U-Net model capable of accurately generating creative labelled samples on command.
- Contributed to Open Source community by publishing pre-trained models on Hugging face.

Activities

Google Developer Student Clubs

Technical Lead

Bloomington, IN

Sep 2021–Present

- Delivered impactful machine learning lectures integrating cutting-edge Generative AI techniques, captivating students from diverse backgrounds in leading computer vision research and foundational concepts