

Govind Mittal

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EDUCATION

New York University (NYU)

Sep 2019 - May 2025

Doctor of Philosophy (Ph.D.) Candidate in COMPUTER SCIENCE, All but dissertation

GPA : 3.8 / 4.0

Dissertation: From Deepfakes to Data Mining: Advanced Forensics and Large-Scale Content Verification

Advisors: Prof. Nasir Memon and Prof. Chinmay Hegde

Birla Institute of Technology and Science (BITS) Pilani, India

Aug 2014 - Jul 2019

Dual Major: Master of Science (Honours) in MATHEMATICS

GPA: 8.0/10.0

Bachelor of Engineering (Honours) in COMPUTER SCIENCE

ACADEMIC PUBLICATIONS

 - Created New Dataset; * - Equal Contribution ;  - Provisionally Patented

1. WavePulse: Real-time Content Analytics of Radio Livestreams  
G Mittal, S Gupta, S Wagle, C Chopra, AJ DeMattee, N Memon, M Ahamad, C Hegde
Under Review
2. PITCH: AI-assisted Tagging of Deepfake Audio Calls using Challenge-Response 
G Mittal, A Jakobbson, KO Marshall, C Hegde, N Memon
Under Review
3. GOTCHA: Real-Time Video Deepfake Detection via Challenge-Response  
G Mittal, C Hegde, N Memon
EuroS&P 2024 (IEEE European Symposium on Security and Privacy)
4. FiFTy: Large-Scale File Fragment Type Identification Using Convolutional Neural Networks 
G Mittal, P Korus, N Memon
TIFS 2020 (IEEE Transactions on Information Forensics and Security Vol. 16)
5. Identity-preserving aging of face images via Latent Diffusion Models
S Banerjee*, **G Mittal***, A Joshi, C Hegde, N Memon
IJCB 2023 (IEEE International Joint Conference on Biometrics, **Best Reviewed Paper**)
TBIOM 2024 (IEEE Transactions on Biometrics, Behavior, and Identity Science, **Special Invite to Journal**)
6. SELECT: A Large-Scale Benchmark of Data Curation Strategies for Image Recognition 
B Feuer, J Xu, N Cohen, P Yubeaton, **G Mittal**, C Hegde
NeurIPS DB 2024 (Neural Information Processing Systems: Datasets and Benchmarks)
7. Circumventing Concept-Erasure Methods for Text-to-Image Generative models
M Pham, KO Marshall, N Cohen, **G Mittal**, C Hegde.
ICLR 2024 (International Conference on Learning Representations)
NeurIPS 2023 Workshop on Diffusion Models.
8. Spoken Language Identification Using ConvNets
Sarthak, S Shukla, **G Mittal**.
AmI 2019 (European Conference on Ambient Intelligence, **Most Cited Paper across Proceedings**)

WORK EXPERIENCE

Research Intern

Jun - Aug 2020

Vidrov

New York, NY

- Company extracted insights from only visual part of daily news videos and lacked capability to process the audio part
- Built company's first end-to-end natural language processing pipeline for extracting events from transcripts

Graduate Research Assistant

Sep 2019 - Dec 2024

NYU Tandon School of Engineering

New York, NY

- Managed a team of 6 to drive an innovative and ambitious research agenda to completion

- Mentored and drove three undergraduate / graduate researchers' interns on ML and efficient usage of AI Infrastructures
- Communicated findings to technically diverse audiences
- Scoped, Adapted and Improvised team performance and research outcomes

SELECTED PROJECTS

WavePulse: Real-time Content Analytics of Radio Livestreams

Summer 2024

Team Management • ETL • Automated Data Collection • RAG • Semantic Search

- Pioneered WavePulse: a framework for nationwide radio analytics with real-time transcription
- Led 6-person team and fast-tracked development and deployment of system under tight resource constraints
- Created fault-tolerant LLM-based processes to handle 18 TB of audio from 400+ live streams.
- Analyzed content to discover radio communities, infer sentiment and spatially and temporally track narratives.

AI-assisted Deepfake Detection in Real-time Video and Audio Calls

Spring 2022 - Fall 2023

Human Studies • Data Collection • Supervized Learning • Synthetic Video and Data

- Invented GOTCHA and PITCH, CAPTCHA-like verification systems to guard against deepfake scams on audio/video calls.
- Boosted deepfake detection to 88% (human) and 82% (AI) AUC against four SoTA pipelines (58% baseline)
- Parsed and understood a massive codebase and all moving parts to improve it to work for me.
- Generated 56,000 deepfake videos and 1.6 million speech samples for comprehensive dataset
- Trained 20 Wav2Vec-based detectors achieving 85% accuracy on challenging deepfake subset

Bayesian Learning for Uncertainty Estimation in Forensic Analysis

Fall 2020 - Spring 2021

Hyperparameter Optimization • ML Software Development

- Developed a modular framework to integrate uncertainty quantification into neural networks for forensic applications
- Optimized ML pipelines, achieving 6x speedup through by prefetching data, parallelizing extraction, transformation, caching and converting code bottlenecks into JIT compiled blocks.

TECHNICAL SKILLS

ML Concepts:	Human Data Collection • Large Language Models • Transformers • Computer Vision • Speech Processing • Auto-encoders • Classification • Regression • Hyper-parameter Optimization • Cross-Validation • Anomaly Detection • Adversarial Attacks
ML Paradigms:	Supervised Learning • Unsupervised Learning • Semi-supervised Learning • Bayesian Machine Learning • Transfer Learning
Pythonic Frameworks:	PyTorch • TensorFlow • NumPy • Pandas • Matplotlib • Jupyter
Cyber Security Concepts:	Threat Modeling • Authentication • Indicators of Compromise • Reverse Engineering • Forensics • Capture-the-Flag • Human and User Studies
Miscellaneous:	Linux • Git • Shell Scripting • Slurm • HPC • PyCharm IDE • Ethics Compliance

AWARDS, FELLOWSHIPS AND MENTIONS

Featured in WIRED: [Real-Time Video Deepfake Scams Are Here. This Tool Attempts to Zap Them](#)

Funded with \$100,000 by **Google's Cyber NYC** Program in 2023 - 2024.

Recipient of **Dean's Ph.D. Fellowship** at NYU Tandon School of Engineering in 2019 - 2020.

Awarded **Young Scientist Fellowship (KVPY)** of Indian Institute of Science (IISc), and funded by the Department of Science and Technology, Government of India, from 2014 to 2019 (Scored **above 99.8 percentile across applicants.**)

VOLUNTEER AND SERVICE

Expert Contributor at Thomson Reuters Fact-Checks

Reviewed for:

- International Conference on Learning Representations (**ICLR**) 2025
- ACM Web Conference (**WWW**) 2025
- ACM International Conference on Multimedia (**ACMMM**) 2024
- IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**) 2024
- IEEE Transactions on Information Forensics and Security (**TIFS**) 2021-2024
- IEEE **Access** 2023-2024

Co-organized Applied Research Competition, Cyber Security Awareness Week (CSAW 2021) at NYU Tandon

REFERENCES

Upto 3 references available upon request.