

# Govind Mittal

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## EDUCATION

### New York University (NYU)

*Doctor of Philosophy (Ph.D.) in* COMPUTER SCIENCE

Dissertation: Media Integrity in Real-time Communication Streams

Advisors: [Prof. Nasir Memon](#) and [Prof. Chinmay Hegde](#)

Sep 2019 - May 2025

GPA : 3.9 / 4.0

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

Dual Major: *Master of Science (Honours) in* MATHEMATICS

*Bachelor of Engineering (Honours) in* COMPUTER SCIENCE

Aug 2014 - Jul 2019

GPA: 8.1/10.0

## 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  
**WWW 2025** (ACM The Web Conference)
2. [PITCH: AI-assisted Tagging of Deepfake Audio Calls using Challenge-Response](#)   
**G Mittal**, A Jakobbson, KO Marshall, C Hegde, N Memon  
**AsiaCCS 2025** (ACM Asia Conference on Computer and Communications Security)
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

[Vidrov](#)

Jun - Aug 2020

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

[NYU Tandon School of Engineering](#)

Sep 2019 - Dec 2024

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

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### **WavePulse: Real-time Content Analytics of Radio Livestreams** Spring 2024 - Fall 2024

*ML System Design • Team Management • ETL • Automated Data Collection • 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 • Supervised 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

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<b>ML Concepts:</b>	Human Data Collection • Synthetic Data Generation • Large Language Models • Transformers • Diffusion Models • Computer Vision • Speech Processing • Classification • Hyper-parameter Optimization • Anomaly Detection • Auto-encoders • GAN
<b>ML Paradigms:</b>	Supervised Learning • Unsupervised Learning • Semi-supervised Learning • Bayesian ML • Transfer Learning • RAG
<b>Pythonic Frameworks:</b>	PyTorch • TensorFlow • NumPy • Pandas • Matplotlib • Jupyter
<b>Cyber Security:</b>	Threat Modeling • Authentication • Forensics • Human and User Studies
<b>Miscellaneous:</b>	Linux • Git • Shell Scripting • Slurm • HPC • PyCharm IDE • Ethics Compliance

## AWARDS, FELLOWSHIPS AND MENTIONS

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

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

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

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**Expert Contributor** at Thomson Reuters Deepfake Audio Fact-checks

**Technical Reviewer:** Evaluated research for top ML venues including **NeurIPS**, **ICLR**, **WWW**, and **IEEE Security**

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

## REFERENCES

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Upto three professional references available upon request.