

Ankita Agrawal

Ph.D. Research Scholar, Department of Computer Science and Engineering
Indian Institute of Technology Roorkee, India

JST LOTUS Research Fellow • Visiting Researcher, Osaka Metropolitan University, Japan

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Research Areas

Generative AI • Diffusion Models • Multimodal Learning • Computer Vision • Trustworthy AI

Research Profile

My Ph.D. research focuses on developing advanced Artificial Intelligence techniques for Generative AI, Diffusion Models, Multimodal Learning, and Trustworthy AI. I investigate diffusion-transformer architectures, multimodal representation learning, uncertainty-aware deep learning, and evidential learning frameworks capable of learning from heterogeneous data under noisy real-world conditions.

My long-term goal is to develop trustworthy multimodal foundation models that can reason across diverse modalities while providing reliable, robust, and interpretable predictions for real-world decision support.

Research Highlights

- Publication in **IEEE Transactions on Geoscience and Remote Sensing (TGRS)**.
- Recipient of the **JST LOTUS Fellowship** supporting international collaborative research at Osaka Metropolitan University, Japan.
- First author on all published and submitted research works.
- Research spanning Generative AI, Diffusion Models, Multimodal Learning, Computer Vision, and Trustworthy AI.

Education

Ph.D. in Computer Science and Engineering Indian Institute of Technology Roorkee, India	2023–Present
M.Tech. in Geoinformatics and Its Applications National Institute of Technology Bhopal, India	2020–2022
B.E. in Computer Science and Engineering Government Engineering College Raipur, India	2014–2018

Research Experience

Visiting Researcher Osaka Metropolitan University, Japan	2026–2027
• Conducting collaborative research on trustworthy multimodal learning and uncertainty-aware AI systems. • Investigating diffusion-based generative learning and multimodal representation learning. • Collaborating on reliable AI systems for scientific machine learning applications.	
Ph.D. Research Scholar Indian Institute of Technology Roorkee, India	2023–Present
• Developing diffusion-based multimodal learning frameworks for heterogeneous visual data. • Designing evidential and uncertainty-aware deep learning methods for trustworthy prediction. • Investigating multimodal foundation models and robust AI under noisy supervision.	

Publications

1. **Ankita Agrawal**, B. Raman, and A. Khan. *Divergence Guided Joint Diffusion-Convolution Network for Multimodal Flood Inundation Mapping*. **IEEE Transactions on Geoscience and Remote Sensing (TGRS)**, 2026.

2. **Ankita Agrawal**, B. Raman, and A. Khan. *Divergence Guided Joint Diffusion-Convolution Network for Multimodal Flood Mapping*. **Meeting on Image Recognition and Understanding (MIRU)**, Nagasaki, Japan, 2026. Presented on August 5, 2026.
3. **Ankita Agrawal**, A. Khan, and B. Raman. *Multi-View Data Fusion for Flood Inundation Mapping*. **IEEE International Geoscience and Remote Sensing Symposium (IGARSS)**, Brisbane, Australia, 2025.
4. **Ankita Agrawal**, B. Raman, and A. Khan. *Diffusion-Based Convolutional Learning and Multi-View Data Fusion for Flood Inundation Mapping*. **AGU Fall Meeting**, New Orleans, Louisiana, USA, 2025.
5. **Ankita Agrawal** and S. K. Katiyar. *LULC Mapping in Urban Area Using a Multi-Resolution Approach*. **AGU Fall Meeting**, New Orleans, Louisiana, USA, 2025.
6. **Ankita Agrawal** and S. Roy. *Random Microfluidic Chip Design Using K-Means Clustering*. **IEEE Computer Society Annual Symposium on VLSI (ISVLSI)**, Knoxville, Tennessee, USA, 2024.

Awards and Fellowships

- JST LOTUS Fellowship Exchange Program, Japan (2026–2027)
- AGU Student Travel Grant (USD 1000), 2025

Open-Source Research

- **JSDFloodNet**: Research implementation of diffusion-based multimodal learning for flood inundation mapping.
<https://github.com/ankita-Agrawal-ai/JSDFloodNet>

Technical Expertise

Artificial Intelligence and Machine Learning

Generative AI, Diffusion Models, Deep Learning, Multimodal Learning, Computer Vision, Representation Learning, Scientific Machine Learning

Trustworthy AI

Uncertainty Quantification, Evidential Deep Learning, Reliable AI Systems

Programming and Frameworks

Python, PyTorch, Scikit-Learn, OpenCV, NumPy, Pandas, Git, LaTeX