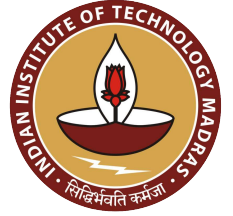# Gopi Raju Matta| EE17D021

Indian Institute of Technology Madras (India)

🕮 www.linkedin.com/in/gopi-raju-matta-1b5347105/

🕮 gopirajumatta.github.io/gopirajumatta/

Education

Program	Institution/Board	%/CGPA	Year
PhD (EE)	Indian Institute of Technology, Madras	**9.0/10**	2017-25
MTech (ETC)	IIEST, Shibpur	**84.4%**	2015-17
BTech (ECE)	RGUKT, IIIT Nuzvid	**9.3/10**	2011-15
Pre University Course (MBiPC)	RGUKT, IIIT Nuzvid	**9.52/10**	2011
Secondary School Certificate	SVNA High School, Chatragadda	**93.3%**	2009

Research Projects

1. ***FLAVORS: Gaussian Splatting for Flare-Free Novel View Synthesis*** **June 2024 - Ongoing**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Proposed FLAVORS, a flare-aware 3D Gaussian Splatting framework for novel view synthesis, integrating flare-occupancy masking, depth regularization, exposure compensation, and EWA filtering for high-fidelity and efficient multi-view reconstruction.

2. ***GeMS: Efficient Gaussian Splatting for Extreme Motion-Blurred Images*** **Jan 2025 - Apr 2025**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Proposed GeMS, a COLMAP-free 3D Gaussian Splatting framework for reconstructing sharp scenes from severely motion-blurred images. Leveraged VGGSfM for robust pose and point cloud initialization, and integrated MCMC-based optimization and event-guided EDI deblurring for high-quality novel view synthesis

3. ***BeSplat: Gaussian Splatting from a Single Blurry Image and Event Stream*** **Sept 2024 - Dec 2024**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Developed BeSplat, a method that recovers sharp radiance fields from a motion-blurred image and event stream using 3D Gaussian Splatting and Bezier SE(3) formulation, enabling view-consistent image rendering and effective camera motion recovery

4. ***GN-FR: Generalizable Neural Radiance Fields for Flare Removal*** **May 2023 - May 2024**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Proposed GN-FR, a generalizable NeRF-based framework for multi-view flare removal, leveraging flare-occupancy masks, view sampling, and unsupervised learning to reconstruct flare-free views from real-world lens flare data.

5. ***High Dynamic Range (HDR) 3D reconstruction of dynamic scenes with 3DGS*** **Jun 2024 - Ongoing**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Working on reconstructing 3D HDR scene from a set of multiple 2D images of dynamic scene using Deep Learning and Gaussian Splatting

6. ***Depth-guided Neural Transformers for Novel View Synthesis*** **May 2024 - Ongoing**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Working on depth-based fine/accurate sampling of neural radiance fields for real-time rendering

7. ***Odometry from Novel SPC cameras for high-speed Robot Navigation*** **May 2022 - May 2023**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Worked on odometry estimation from novel single photon binary frames(100k fps) for high-speed navigation applications

8. ***Night-time Video Dehazing*** **March 2021 - May 2022**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

○ Contributed a supervised dataset using GTA-5 to simulate nighttime fog and explored SOTA deep learning models to remove fog and improve nighttime image visibility.

9. *Towards Realistic Underwater Dataset Generation and Color Restoration* **March 2021 - May 2022**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

- Worked on color restoration of underwater images by contributing synthetic supervised dataset using multimodal domian adaptation technique

8. *Underwater 3-D Scene Reconstruction Using Event Sensor & Laser Projector* **July 2018 - March 2021**
(PhD / Guide: Prof. Kaushik Mitra) *IIT Madras*

- Worked on reconstruction 3D structure of underwater objects using structured light system: laser scanning projector & event camera

10. *Image Registration methods Applicable to Super-Resolution Analysis* **July 2016 - March 2017**
(MTech / Guide: Prof. Ayan Banerjee) *IIEST Shibpur*

- Worked on different image registration methods for MRI images.

11. *Effective 4G Communication using OFDM* **July 2014 - March 2015**
(BTech / Guide: Dr. Rama Krishna Muni) *RGUKT IIIT Nuzvid*

- Worked on OFDM algorithm to develop 4G communication system using MATLAB.

Publications

- Matta, G.R., Reddypalli, T. and Mitra, K., 2025. **FLAVORS: Gaussian Splatting for Flare-Free Novel View Synthesis** (Manuscript under preparation)
- Matta, G.R., Reddypalli, T., Vemunuri, D.M. and Mitra, K., 2025. **GeMS: Efficient Gaussian Splatting for Extreme Motion-Blurred Images** (Manuscript under review)
- Matta, G.R., Reddypalli, T. and Mitra, K., 2025. **BeSplat: Gaussian Splatting from a Single Blurry Image and Event Stream**. In Proceedings of the Winter Conference on Applications of Computer Vision (pp. 917-927).
- Matta, G.R., Siddartha, R., Venkata Girish, R.S., Sharma, S. and Mitra, K., 2024. **GN-FR: Generalizable Neural Radiance Fields for Flare Removal**. In Proceedings of the British Machine Vision Conference (BMVC), Glasgow, UK, 25–28 November 2024. BMVA.
- Jain, N., Matta, G.R. and Mitra, K., 2022, December. **Towards Realistic Underwater Dataset Generation and Color Restoration**. In Proceedings of the Thirteenth Indian Conference on Computer Vision, Graphics and Image Processing (pp. 1-9).

Industrial Training

1. *Behavioral Modeling of 1Gbps Receiver* **May 2016 - July 2016**
(M.Tech / Mentor: Mr. Krishna Mahesh Karanam) *Texas Instruments India, Bangalore*

- Developed a behavioral model using Verilog-A on Cadence for a 1Gbps receiver, optimizing channel equalization with CTLE to transmit 1.25Gbps data through coaxial cable and achieved 50ps jitter.

Course Work

1. Key Courses **August 2018-April 2019**
(Core and electives) *IIT Madras*

- Course: Advanced Topics in Signal Processing(Deep Learning), Pattern Recognition(Machine Learning), Photometry & Geometry in Computer Vision, Convex Optimization, Image Signal Processing, Applied Linear Algebra

Technical Skills

- Programming Languages: Python, MATLAB, C, C++, CUDA
- Operating Systems: Windows, Linux, ROS
- ML Frameworks: PyTorch, TensorFlow, Keras
- Tools: Docker, Blender, Microsoft Office

Positions of Responsibility

- *Faculty* at Learning Room for CBSE X, XI maths (2023-).
- *Teaching Assistant* for Computational Photography course, EE Department, IIT Madras (Jan-May, 2022).
- *Teaching Assistant* for Probability Foundations for Electrical Engineers, EE Department, IIT Madras (July-Dec, 2021).
- *Teaching Assistant* for Computational Photography course, EE Department, IIT Madras (Jan-May, 2021).
- *Teaching Assistant* for Modern Computer Vision course, EE Department, IIT Madras (July-Dec, 2020).

- *Teaching Assistant* for Signals and Systems course, EE Department, IIT Madras (Jan-May, 2019).
- *Teaching Assistant* for Data Analytics Laboratory course, EE Department, IIT Madras (July-Dec, 2018 & 19).
- *Teaching Assistant* for Digital Singal Processing course, EE Department, IIT Madras (Jan-May, 2018).

Workshops

- 3D Vision Summer School (3DVSS), 2017 organized by IIIT Hyderabad.

Achievements/Awards

- Successfully qualified *JRF-NET* (2014).
- Secured 1358 rank in GATE-16 and 3460 rank in GATE-15 in ECE.
- Got selected for 6-year integrated Program instituted by AP Government for gifted Rural Youth.
- Our Exploratory Research Project proposal titled Wide Field-of-view and Dense 3D Reconstruction of Underwater Archeological Sites got approved for funding from ICSR, one of the 29 proposals for the year 2018-2019.
- Stood class 1st in B.Tech in Electronics & Communication Engineering.
- Stood overall 2nd in M.Tech in Electronics and Telecommunicatin Engineering.
- Secured 1152 rank in AP polytechnic exam - 2009.
- Stood school 1st in SSC examination.

Others

- Hobbies: Prayer, Playing Guitar, Learning languages
- Languages: English, Hindi, Bengali, Tamil, German.

Declaration

I do hereby declare that all the details furnished above are true to the best of my knowledge and belief.

Place: Chennai, Tamil Nadu (India)   (Gopi Raju Matta)
Date: 02/05/2024