

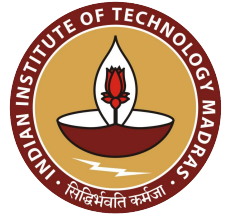
# Sally Khaidem | EE20D041

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## Education

Program	Institution/Board	%/CGPA	Year
<a href="#">PhD</a> (EE)	Indian Institute of Technology, Madras	<b>7.87/10</b>	2020-25
<a href="#">MTech</a> (VLSI & Embedded Systems)	National Institute of Technology, Manipur	<b>8.35/10</b>	2018-20
<a href="#">BE</a> (ECE)	BMS College of Engineering, Bengaluru	<b>8.37/10</b>	2013-17
<a href="#">Senior Secondary Exam</a> (CBSE)	Ramakrishna Mission Vidyapith, Deoghar	<b>92.4%</b>	2013
<a href="#">Secondary Exam</a> (WBBSE)	Ramakrishna Mission Vidyapith, Purulia	<b>77.3%</b>	2011

## Publications

### Journals

- **Khaidem, S., Jangid, R. and Sharma, M., 2025. Lightweight and High-Speed Contextual Intensity Image Reconstruction from Event-Based Sensors with Adaptive FastDynamicNet, *Journal of Electronic Imaging* (Accepted)**
- **Khaidem, S., Kumar, A.N., Sharma, M. and Mitra, K., 2025. Blur to Brilliance: Neuromorphic Data Guided Deblurring and HDR Novel View Synthesis (Manuscript under review)**
- **Khaidem, S., Dharmaraj, A.C. and Sharma, M., 2025. Towards Efficient Neuromorphic Data Processing: A Novel Representation with Lossless Spatio-Temporal Compression (Manuscript under review)**
- Ravishankar, J., Sharma, M. and Khaidem, S. 2022. **A Hybrid Tucker-VQ Tensor Sketch Decomposition Model for Coding and Streaming Real World Light Fields Using Stack of Differently Focused Images, *Pattern Recognition Letters***
- **Khaidem, S., Keisham, P., Loitongbam, S. and Khumanthem, M., 2020. Detection and Removal of Impulse Noise from Colour Image Using Lagrange Interpolation and Centre Weighted Vector Median Filter, *Journal of Advanced Research in Dynamical and Control Systems***

### Conferences

- **Khaidem, S., Choudhary, R., Sharma, M. and Sankarnarayan, B., 2025. High Resolution Multi-exposure Stereo Event-Intensity-Depth Database of Natural Scenes, *IEEE International Conference on Emerging Technologies and Applications (ICETA)*, IIIT Gwalior**
- **Khaidem, S. and Sharma, M., 2024. An Integrated Representation & Compression Scheme Based on Convolutional Autoencoders with 4D-DCT Perceptual Encoding for High Dynamic Range Light Fields, *IEEE 8th International Conference on Information and Communication Technology (CICT)*, IIIT Allahabad**
- **Khaidem, S. and Sharma, M., 2024. A Deep Belief Network Approach to Scalable Compression of Light Field Data for Auto-Stereoscopic Displays, *35th British Machine Vision Conference (BMVC)*, Glasgow, UK**
- **Khaidem, S., Nevatia, A and Sharma, M., 2023. A Novel Approach for Neuromorphic Vision Data Compression Based on Deep Belief Network, *Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP)*, IIT Ropar**
- Ravishankar, J., **Khaidem, S.** and Sharma, M. 2023. **A Data-Driven Approach based on Dynamic Mode Decomposition for Efficient Encoding of Dynamic Light Fields, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Vancouver, Canada**
- Ravishankar, J., Sharma, M. and **Khaidem, S.**, 2021. **A Novel Compression Scheme Based on Hybrid Tucker-Vector Quantization via Tensor Sketching for Dynamic Light Fields Acquired Through Coded Aperture Camera, *International Conference on 3D Immersion (IC3D)*, Brussels, Belgium**

## Research Projects

1. [Neuromorphic Data Guided Deblurring and HDR Novel View Synthesis](#)  
(PhD / Guide: Prof. Kaushik Mitra; Co-Guide: Prof. Mansi Sharma)

Nov 2024 - Ongoing  
IIT Madras

- Develop a framework to sharpen blurry RGB images with event data and luma fusion, build a multi-exposure image stack, and feed it into HDR neural radiance field to produce sharp HDR novel views.
- 2. *Towards Efficient Neuromorphic Data Processing*** **Nov 2024 - Ongoing**  
IIT Madras  
(PhD / Guide: Prof. Mansi Sharma)
  - Designed a two-stage scheme combining a voxelized Super Binary Map to exploit spatiotemporal sparsity with a Temporal Event Vector for polarity, then applied RLE and context-adaptive entropy coding for highly efficient, no-loss compression.
- 3. *Scalable Compression of Light Field Data for Auto-Stereoscopic Displays*** **Jul 2024 - Nov 2024**  
IIT Madras  
(PhD / Guide: Prof. Mansi Sharma)
  - Developed a compact representation by converting stacked light-attenuating layers into weighted binary patterns, compressing them via a Deep Belief Network into latent codes, and encoding with H.265—enabling high-resolution, wide-angle, see-through light-field displays with natural depth and motion parallax.
- 4. *Neuromorphic Vision Data Compression Based on Deep Belief Network*** **Feb 2023 - Aug 2023**  
IIT Madras  
(PhD / Guide: Prof. Mansi Sharma)
  - Designed a two-stage scheme combining a voxelized Super Binary Map to exploit spatiotemporal sparsity with a Temporal Event Vector for polarity, then applied RLE and context-adaptive entropy coding for highly efficient, no-loss compression.
- 5. *Dynamic Mode Decomposition for Efficient Encoding of Dynamic Light Fields*** **Dec 2022 - March 2023**  
IIT Madras  
(PhD / Guide: Prof. Mansi Sharma)
  - Captured dynamic light fields via optimized coded-aperture patterns, then applied data-driven Dynamic Mode Decomposition to exploit spatial, angular, and temporal correlations. Finally, we used HEVC to remove intra- and inter-frame redundancies—offering the first light-field video codec grounded in dynamical systems theory with flexible bitrate control.
- 6. *Coding & Streaming of Real World Light Fields Using Focal Stack*** **Jan 2022 - Aug 2022**  
IIT Madras  
(PhD / Guide: Prof. Mansi Sharma)
  - Proposed three focal-stack based tensor decomposition schemes (FS-HTTSVQ, FS-TTS, FS-TALS) for efficient coding and streaming of autostereoscopic light-field displays using a small stack of differently focused images, greatly reducing acquisition and processing costs.
- 7. *Compression for Dynamic Light Fields captured using Coded-Aperture camera*** **Nov 2020 - Mar 2021**  
IIT Madras  
(PhD / Guide: Prof. Mansi Sharma)
  - Proposed a single-pass Hybrid Tucker TensorSketch VQ (HTTSVQ) scheme—combined with HEVC encoding—for efficient, on-the-fly representation, streaming, and compression of dynamic light fields captured via coded-aperture patterns, eliminating intra, inter and intrinsic redundancies without full tensor storage.
- 8. *FPGA based Impulse Noise Removal via Lagrange Interpolation & median filtering*** **Jul 2019 - Nov 2019**  
NIT Manipur  
(M.Tech / Guide: Prof. Keisham Pritamdas)
  - Designed a Verilog architecture on FPGA that applies Lagrange interpolation over local pixel neighborhoods to detect impulse noise by thresholding prediction errors, then restores outliers with a centre-weighted vector-median filter—achieving low-latency, real-time denoising with minimal resource utilization.
- 9. *Embedded Handwritten Digit OCR on Raspberry Pi with TensorFlow for Poets*** **Jan 2016 - Feb 2017**  
BMSCE Bengaluru  
(B.E / Guide: Prof. K.P Lakshmi)
  - Compact Raspberry Pi OCR pipeline using TensorFlow Poets v2: we fine-tuned a lightweight CNN on our own handwritten-digit dataset and integrated camera capture, preprocessing, and on-device inference to deliver real-time digit recognition within the Pi's CPU and memory constraints.

## Course Work

- 1. Key Courses** **September 2020 - May 2021**  
IIT Madras  
(Core and electives)
  - Course: Advanced Topics in Signal Processing(Deep Learning), Pattern Recognition(Machine Learning), Photometry & Geometry in Computer Vision, Image Signal Processing, Applied Linear Algebra, Probability for Electrical Engineering

## Technical Skills

- Programming Languages: Python, MATLAB
- Operating Systems: Windows, Linux, ROS, MacOS

- ML Frameworks: PyTorch, TensorFlow
- Tools: Docker, Blender

## Positions of Responsibility

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- *Teaching Assistant* for EE5155:Wireless Networks course, EE Department, IIT Madras (Jul-Nov, 2021).
- *Teaching Assistant* for EE6130:Advanced Topics in Signal Processing, EE Department, IIT Madras (Jan-May, 2022).
- *Teaching Assistant* for EE1100:Basic Electrical Engineering, EE Department, IIT Madras (Jul-Nov, 2022).
- *Teaching Assistant* for EE5180:Introduction to Machine Learning, EE Department, IIT Madras (Jan-May, 2023).
- *Teaching Assistant* for EE5179:Deep Learning for Imaging, EE Department, IIT Madras (Jul-Nov, 2023).
- *Teaching Assistant* for EE5178:Modern Computer Vision, EE Department, IIT Madras (Jan-May, 2024).
- *Teaching Assistant* for EE5176:Computational Photography, EE Department, IIT Madras (Jul-Nov, 2024).
- *Teaching Assistant* for EE5178:Modern Computer Vision, EE Department, IIT Madras (Jan-May, 2025).

## Achievements/Awards

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- Qualified GATE-2018, 2019 and 2020 in ECE.
- Stood overall 1<sup>st</sup> in M.Tech in VLSI and Embedded System Design (ECE).

## Languages

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- Manipuri (native speaker)
- English (fluent in speaking, reading, writing, and listening)
- Hindi (fluent in speaking, reading, writing, and listening)
- Bengali (fluent in speaking, reading, writing, and listening)