

# Gnana Praveen R

## Curriculum Vitae

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## Summary

AI Researcher with 13 years of industry and academic experience in Machine Learning and Computer Vision. Passionate to design and build solutions for real-world problems related to computer vision and multimodal learning applications.

## Education

- 2018–2023 **PhD**, *Ecole de Technologie Supérieure (ETS)*, Montreal, Canada.  
Department of Systems Engineering  
[Laboratory for Imagery Vision and Artificial Intelligence \(LIVIA\)](#)  
Thesis: [Deep learning-based Regression models for Dynamic Expression Recognition in videos](#)  
Advisors: [Prof. Eric Granger](#) and [Prof. Patrick Cardinal](#)
- 2010–2012 **Masters of Technology**, *Indian Institute of Technology Guwahati (IITG)*, India.  
Electronics and Electrical Engineering  
[Image Processing and Computer Vision Laboratory](#)  
Master Thesis: [A Code and Domain-Independent Traitor Tracing System](#)  
Advisor: [Prof. Kannan Karthik](#)
- 2005–2009 **Bachelor of Technology**, *Jawaharlal Nehru Technological University (JNTU)*, Kakinada, India.  
Specialization: Electronics and Communication Engineering  
Undergraduate Thesis: Image Inpainting using Exemplar-Based Synthesis

## Research Interests

I am interested in the area of Machine Learning and Computer Vision including

- Multimodal Learning
- Deep Learning
- Affective Computing
- Video Analytics

## Work Experience

Mar '23 - Present **Computer Research Institute Montreal, Canada.**

*Post-Doctoral Researcher*



**Audio-Visual Learning**

- Exploring audio-visual learning for person verification and emotion recognition.

Jul '17 - Jan '18



**Synechron, Bangalore, India.**

*Lead Engineer*

**Automated Document Classification**

- o Developed a system for the automatic classification of financial documents.

**Iris Recognition**

- o Proposed an algorithm for Iris Recognition using low-resolution Visible Images.

Jul '15-Jun '17



**Impartus Innovation, Bangalore, India.**

*Digital Signal Processing Engineer*

**Facial Analysis**

- o Developed a system for automatic face recognition of professors in classrooms.
- o Developed a system for face tracking for the application of PIP in lecture videos.

**Natural Language Processing**

- o Developed a system for automatic tagging of queries and similarity query matching.

**Automatic Speech Recognition**

- o Developed a system of automatic speech recognition for lecture videos using kaldi.

Feb '14-Jun '15



**Samsung Research Institute, Bangalore, India.**

*Senior Software Engineer*

**NIR Imaging**

- o Proposed an algorithm for the enhancement of images captured at low light scenarios.
- o Proposed an algorithm for realistic skin smoothing for Portrait Enhancement.

Jul '13-Dec '13



**Supercomputer Education Research Center, Indian Institute of Science, Bangalore, India.**

*Project Associate with Prof. R. Venkatesh Babu*

**Crowd Flow Analysis in H.264 Compressed Videos**

*Sponsored by DRDO*

- o Proposed an algorithm for crowd flow segmentation by clustering the motion vectors in H.264 compressed domain using the Expectation-Maximization (EM) algorithm.
- o Superpixel-based crowd flow segmentation is proposed using only the motion vectors in H.264 compressed videos, devoid of prior knowledge of flow segments.

**Automatic Validation of Cheques**

*Sponsored by Tech Mahindra*

- o Developed a general framework for the extraction of salient regions in the cheque for validating the presence or absence of required items based on SIFT features.

Jul'12-May'13



**Electronics and Electrical Engineering, Indian Institute of Technology, Guwahati, India.**

*Associate Project Engineer with Prof. Roy P Paily*

**Feasibility Studies of Blind Navigation Assistance System**

*Sponsored by Deity*

- o Developed a depth estimation technique from a single image based on a local depth hypothesis devoid of any user intervention and its application to assist visually impaired people.

**Selected Publications** ([I Google Scholar](#) : 0.2k+ citations with h-index of 9)

2024

Recursive Joint Cross-Modal Attention for Multimodal Fusion in Dimensional Emotion Recognition .

**R Gnana Praveen**, and Jahangir Alam

Computer Vision and Pattern Recognition Workshop (**CVPR-W**), 2024.

Cross-Attention is Not Always Needed: Dynamic Cross-Attention for Audio-Visual Dimensional Emotion Recognition **Acceptance (Oral) Rate: 15%** .

**R Gnana Praveen**, and Jahangir Alam

IEEE International Conference on Multimedia and Expo (**ICME**), 2024.

Audio-Visual Person Verification based on Recursive Fusion of Joint Cross-Attention **Acceptance Rate: 39.4%** .

**R Gnana Praveen**, and Jahangir Alam

IEEE International Conference on Face and Gesture Recognition (**FG**), 2024.

Neural Information Processing Systems Workshop (**NeurIPS-W**) , 2023.

Dynamic Cross Attention for Audio-Visual Person Verification **Acceptance Rate: 39.4%** .

**R Gnana Praveen**, and Jahangir Alam

IEEE International Conference on Face and Gesture Recognition (**FG**), 2024.

**2023** Recursive Joint Attention for Audio-Visual Fusion in Regression-based Emotion Recognition (**Oral**).

**R Gnana Praveen**, Eric Granger and Patrick Cardinal

IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP**), 2023. [i paper](#)

**2022** Audio-Visual Fusion for Emotion Recognition in Valence-Arousal Space Using Joint Cross-Attention (**Best of FG2021 : 6.33% of accepted papers in FG2021**). .

**R Gnana Praveen**, Patrick Cardinal, and Eric Granger

IEEE Transactions on Biometrics, Behavior, and Identity Science (**T-BIOM**) 2022. [i paper](#)

A Joint Cross-Attention Model for Audio-Visual Fusion in Dimensional Emotion Recognition(**Oral**).

**R Gnana Praveen**, Wheidima Carneiro de Melo, Nasib Ullah, Haseeb Aslam, Osama Zeeshan, Theo Denorme, Marco Pedersoli, Alessandro Koerich, Simon Bacon, Patrick Cardinal, and Eric Granger

Computer Vision and Pattern Recognition Workshops (**CVPR-W**), 2022. [i paper](#)

Cross Attentional Audio-Visual Fusion for Dimensional Emotion Recognition **Acceptance (Oral) Rate: 9.6%**.

**R Gnana Praveen**, Eric Granger and Patrick Cardinal

IEEE International Conference on Face and Gesture Recognition (**FG**), 2021. [i paper](#)

**2021** Holistic Guidance for Occluded Person Re-Identification **Acceptance (Oral) Rate: 3.3%**.

Madhu Kiran, **R Gnana Praveen**, Le Thanh Nguyen-Meidine, Soufiane Belharbi, Louis-Antoine Blais-Morin, Eric Granger

British Machine Vision Conference (**BMVC**), 2021. [i paper](#)

Deep domain adaptation with ordinal regression for pain assessment using weakly-labeled videos.

**R Gnana Praveen**, Eric Granger and Patrick Cardinal

Image and Vision Computing journal (**IVC**) [Impact Factor: 4.7], 2021. [i paper](#)

**2020** Deep Weakly-Supervised Domain Adaptation for Pain Localization in Videos  
**Acceptance Rate: 44%.**

**R Gnana Praveen**, Eric Granger and Patrick Cardinal  
IEEE International Conference on Face and Gesture Recognition (**FG**), 2020. [📄 paper](#)

**2014** Superpixel Based Crowd Flow Segmentation in H.264 Compressed Videos.

Sovan Biswas, **R Gnana Praveen** and R Venkatesh Babu  
IEEE International Conference on Image Processing (**ICIP**), 2014. [📄 paper](#)

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## Achievements

- March 2024 Achieved 2nd place (runner-up) in the valence-arousal challenge of 6th **ABAW** competition held in conjunction with **CVPR2024**.
- September 2018 Received **FRQNTS research scholarship** for my Ph.D. program at ETS, Canada
- September 2017 **Spot Award** to develop a system for iris recognition using visible images at Synchron
- March 2016 **Go Extra Mile** Award for developing an end-to-end system for automatic tagging of text queries at Impartus Innovation
- March 2010 Among top 0.12 of 1,05,000 students and secured 98.75 percentile in Gate 2010  
Got 9th rank in 11th grade and 14th rank in 12th grade in my province.

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## Professional Service

- Reviewer European Conference on Computer Vision (ECCV)- 2024  
International Conference on Multimedia and Expo (ICME)- 2024  
IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2024  
IEEE Transactions on Affective Computing (TAFFC)  
IEEE Winter Conference on Applications of Computer Vision (WACV)- 2021, 2024  
ACM Multimedia (ACM MM- 2023, 2024)

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## Technical Skills

- Systems Windows, Linux, MacOS, High-Performance Computing (Slurm)  
Programming C, Matlab, Python, PyTorch

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## Personal Profile

- Date of Birth 31 - 01 - 1988  
Languages Known English, Tamil and Telugu  
Hobbies Reading Books and Playing rhythm instruments

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## Declaration

I, R Gnana Praveen do hereby declare that all the particulars given herein are true to the best of my knowledge.

GNANA PRAVEEN R