

# 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**

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

**Iris Recognition**

- 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**

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

**Natural Language Processing**

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

**Automatic Speech Recognition**

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

Feb '14-Jun '15



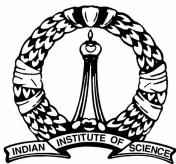
**Samsung Research Institute, Bangalore, India.**

*Senior Software Engineer*

**NIR Imaging**

- Proposed an algorithm for the enhancement of images captured at low light scenarios.
- 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*

- Proposed an algorithm for crowd flow segmentation by clustering the motion vectors in H.264 compressed domain using the Expectation-Maximization (EM) algorithm.
- 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*

- 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*

- 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.

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## Selected Publications ([Google Scholar](#) : 0.3k+ citations with h-index of 10)

2024

Incongruity-Aware Cross-Modal Attention for Audio-Visual Fusion in Dimensional Emotion Recognition .

**R Gnana Praveen**, and Jahangir Alam

IEEE Journal of Selected Topics in Signal Processing (**JSTSP**) [**Impact Factor:8.7**], 2024. [paper](#)

- Recursive Joint Cross-Modal Attention for Multimodal Fusion in Dimensional Emotion Recognition (**Oral**).
- R Gnana Praveen**, and Jahangir Alam  
Computer Vision and Pattern Recognition Workshop (**CVPR-W**), 2024. [📄 paper](#)
- Cross-Attention is Not Always Needed: Dynamic Cross-Attention for Audio-Visual Dimensional Emotion Recognition **Acceptance (Oral) Rate: 5.52%** .
- 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  
Neural Information Processing Systems Workshop (**NeurIPS-W**) , 2023. [📄 paper](#)  
IEEE International Conference on Face and Gesture Recognition (**FG**), 2024. [📄 paper](#)
- 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. [📄 paper](#)
- 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. [📄 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. [📄 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. [📄 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. [📄 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. [📄 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. [📄 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 **FRQNT 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 Synchrotron

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

International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2024

IEEE Transactions on Affective Computing (TAFCC)

Winter Conference on Applications of Computer Vision (WACV)- 2021, 2024, 2025

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