

Gnana Praveen R

Curriculum Vitae

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Summary

Researcher with 10 years of research experience in Image Processing, Machine Learning and Computer Vision. Passionate to design and build solutions for real world problems related to computer vision and affective computing applications.

Education

2018–2022



PhD, *Ecole de technologie supérieure (ÉTS)*, Montreal, Canada.

Department of Systems Engineering

Laboratory for Imagery Vision and Artificial Intelligence (LIVIA)

Specialization: Affective Computing, Deep Learning

Doctoral Thesis: Deep learning based regression models for Dynamic Expression Recognition in videos

2010–2012



Masters of Technology, *Indian Institute of Technology Guwahati (IITG)*, Assam, India.

Electronics and Electrical Engineering

Image Processing and Computer Vision Laboratory

Specialization: Signal Processing

Master Thesis: A Code and Domain Independent Traitor Tracing System

2005–2009



Bachelor of Technology, *Jawaharlal Nehru Technological University (JNTU)*, Kakinada, India.

Specialization: Electronics and Communication Engineering

Undergraduate Research: Image Inpainting using Exemplar Based Synthesis

Research Interests

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

- Pattern Recognition
- Deep Learning
- Affective Computing
- Video Analytics

Research Experience

Mar '18 - May '18

NouveauLabs, Bangalore.

Research Consultant



Object Detection in Retail Store

- Explored the feasibility of RCNN for object detection in retail store environment.
- Techniques Used : YOLO, RCNN, AlexNet
- Programming : Python, CNTK,

Jul '17 - Jan '18

Synechron, Bangalore.

Lead Engineer



Automated Document Classification

- Developed a system for automatic classification of financial documents.
- Techniques Used : Local Binary Pattern (LBP), SVM, SIFT
- Tools Used : Numpy, Scipy, matplotlib, PIL, OpenCV, scikit-learn, scikit-image
- Programming : Python

Iris Recognition

- Proposed an algorithm for Iris Recognition using Visible Images.
- Explored the prospect of Iris Recognition with low resolution visible images.
- Tools Used : Local Binary Pattern (LBP), Random Forest.
- Programming : Python

Jul '15-Jun '17

Impartus Innovation, Bangalore.

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.
- Techniques Used : Local Binary Pattern (LBP), SVM, Viola-Jones Face Detection
- Tools Used : Numpy, Scipy, matplotlib, PIL, OpenCV, scikit-learn, scikit-image, Bob
- Programming : Python

Natural Language Processing

- Proposed an algorithm for automatic tagging of queries.
- Proposed an algorithm for similar query matching.
- Techniques Used : Labeled Latent Dirichlet Allocation (LLDA)
- Tools Used : NLTK Toolkit, gensim, Reuters
- Programming : Python

Automatic Speech Recognition

- Developed a system of automatic speech recognition for lecture videos using kaldi.
- Techniques Used : Kaldi, Hidden Markov Model (HMM), Gaussian Mixture Model(GMM), MFCC
- Programming : Python, Shell Scripting

Feb '14-Jun '15

Samsung Research Institute , Bangalore.

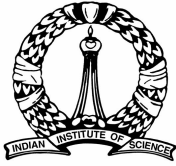
Senior Software Engineer



NIR Imaging

- Explored the prospect of NIR Images for various applications.
- Proposed an algorithm for the enhancement of images captured at low light scenarios.
- Proposed an algorithm for realistic skin smoothing for Portrait Enhancement.
- Tools Used : OpenCV
- Programming : C

Jul '13-Dec '13



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

Project Associate with Dr. R Venkatesh Babu

Crowd Flow Analysis in H.264 Compressed Domain

Sponsored by DRDO

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

- Proposed a general framework for the extraction of salient regions in the cheque for validating the presence or absence of required items.
- Developing template based algorithms for validating the cheque images based on SIFT features.

Jul'12-May'13



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

Associate Project Engineer with Prof. Roy P Paily

Feasibility Studies of Blind Navigation Assistance System

Sponsored by Deity

- Investigated and developed a depth estimation technique from a single image based on local depth hypothesis devoid of any user intervention and its application to assist the visually impaired people is proposed.

Publications ([Google Scholar profile](#))

A Code and Domain independent Traitor Tracing System based on the Eigen-decomposition of Fingerprinted Images.

R Gnana Praveen, A Madhavaraj and Kannan Karthik

Proceedings of IEEE International Conference on Image Information Processing (ICIIP), 2011 [paper](#)

Blind Navigation Assistance for the Visually Impaired based on Local Depth Hypothesis from a Single Image.

R Gnana Praveen and Roy P Paily

Elsevier Journal in Procedia Engineering vol. 64 pp. 351 - 360, 2013 [paper](#)

Crowd Flow Segmentation Based on Motion Vectors in H.264 Compressed Domain.

R Gnana Praveen and R Venkatesh Babu

Proceedings of IEEE International Conference on Electronics, Computing, and Communication technologies (CONECCT), 2014. [paper](#)

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

Sovan Biswas, R Gnana Praveen and R Venkatesh Babu

Proceedings of IEEE International Conference on Image Processing (ICIP), 2014. [paper](#)

Compressed Domain Human Action Recognition in H.264/AVC Video Streams.

Manu Tom, R Venkatesh Babu and R Gnana Praveen

Multimedia Tools and Applications pp. 1 - 16, 2014. [paper](#)

Iris Recognition using visible images based on the fusion of Daugmans approach and Hough Transform.

R Gnana Praveen, Ravi Mangipudi and Sriraam Kumar Malavalli

Proceedings of IEEE International Conference on Biometric Engineering and Applications (ICBEA), 2018. [📄 paper](#)

Deep Weakly-Supervised Domain Adaptation for Pain Localization in Videos.

R Gnana Praveen, Eric Granger and Patrick Cardinal

IEEE International Conference on Face and Gesture Recognition (FG), 2020. [📄 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 (IVU), 2020. [📄 paper](#)

Cross Attentional Audio-Visual Fusion for Dimensional Emotion Recognition.

R Gnana Praveen, Eric Granger and Patrick Cardinal

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

Holistic Guidance for Occluded Person Re-Identification.

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

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

A Joint Cross-Attention Model for Audio-Visual Fusion in Dimensional Emotion Recognition.

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 (CVPR) Workshops, 2022. [📄 paper](#)

Audio-Visual Fusion for Emotion Recognition in Valence-Arousal Space Using Joint Cross-Attention.

R Gnana Praveen, Patrick Cardinal, and Eric Granger

IEEE Transactions on Biometrics, Behavior, and Identity Science, 2023. [📄 paper](#)

Weakly Supervised Learning for Facial Behavior Analysis : A Review .

R Gnana Praveen, Patrick Cardinal, and Eric Granger

IEEE Transactions on Affective Computing, 2022 (Submitted).

Achievements

Got state 9th rank in 11th standard and state 14th rank in 12th standard

March 2010 Among top 0.12 of 1,05,000 students and secured 98.75 percentile in Gate 2010

March 2016 **Go Extra Mile Award** for developing end-to-end system for automatic tagging of text queries

September 2017 **Spot Award** for developing a system for iris recognition using visible images

September 2018 Received **FRQNTS research scholarship** for my PhD program

Technical Skills

Operating Systems Windows, Linux, MacOS
Programming Languages C, Matlab, Python, PyTorch
Software Packages L^AT_EX, MS Office

Personal Profile

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

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