

## Curriculum Vitae – Dr. Raghavendra U., B.E, M. Tech., Ph.D.

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**CONTACT** Senior - Assistant Professor  
**INFORMATION** Department of Instrumentation and Control Engineering  
Manipal Institute of Technology  
Manipal Academy of Higher Education, Manipal – 576104, INDIA  
E-mail: [raghavendra.u@manipal.edu](mailto:raghavendra.u@manipal.edu), [raghux109@gmail.com](mailto:raghux109@gmail.com)  
Phone: (+91) 9008052848

**EDUCATION** Manipal University – Manipal, India  
**Ph.D.**  
**Dissertation:** Robust Object Detection and Tracking Using Stereo Vision

**Abstract:** Surveillance for multiple objects is the key requirement in many intelligent systems. It has a variety of potential applications which includes early recognition of on-going abnormal activities, automated surveillance, advanced user interfaces, etc. State-of-the-art solutions are prone to inefficiency due to real-time challenges such as change in illumination, occlusion, shadow interferences, etc., a robust detection and tracking module irrespective of real-time condition has a great potential. In this work develops an efficient multiple object detection and tracking algorithm using stereo vision, which can address several real-time challenges such as radiometric variations, object occlusion and shadow in a single framework.

Visvesvaraya Technological University – Belgaum, India  
**Master of Technology (M.Tech.)** – Microelectronics and Control Systems, July 2010  
**Dissertation:** A New Face Recognition System Using PCA, LDA and Support Vector machine

Visvesvaraya Technological University – Belgaum, India  
**Bachelor of Engineering (B.E.)** – Electronics and Communication, Aug 2006

**ACADEMIC APPOINTMENTS** Assistant Professor - Department of Instrumentation and Control Engineering, Manipal Institute of Technology, Manipal, India (12<sup>th</sup> July 2014 to till date)

Research Scholar - Manipal Institute of Technology, Manipal, India (02<sup>nd</sup> November 2010 to 13<sup>th</sup> June 2014)

Lecturer in the Department of Electronics and Communication Engineering, Anjuman Engineering College, Bhatkal, India. (12<sup>th</sup> November 2006 to 31<sup>st</sup> October 2010)

**INVENTION AND PATENTS**

**"Method and System for Efficient Stereo Matching"**, Indian Patent Application Number: **89/CHE/2014** filed on 8th Jan 2014. (Patent Pending).

Received **Invention Award form Intellectual Ventures USA** for the invention titled "Multiple Objects Detection and Tracking for Augmented Reality" on June-2014.

Received **Invention Award form Intellectual Ventures USA** for the invention titled "Hybrid Correlation for Illumination Invariant Stereo Matching" on September-2013.

**HONORS AND RECOGNITION**

Received **"Mohan and Latha Bhandarkar"** Scholarship award for best research student from Manipal University for the year 2013.

Received **"Structured Ph.D. Scholarship"** from Manipal University for the entire duration of study.

Received **best paper award** for our paper in National Conference on Recent Advances in Information Technology NCRAIT-2014, organized by department of Computational Sciences, Solapur University, Solapur.

Name is listed in 32<sup>nd</sup> Pearl Anniversary Edition of Marquis Who's Who, NJ, USA, December-2014.

Received **"Rashtrapathi Scout"** award from Bharath Scout India, 1997.

**PEER REVIEWED  
PUBLICATIONS**

**U Raghavendra**, Sulatha V. Bhandary, Anjan Gudigar, U. Rajendra Acharya, Novel expert system for glaucoma identification using non-parametric spatial envelope energy spectrum with fundus images, *Biocybernetics and Biomedical Engineering*, Elsevier, 2017 (In Press). *Impact Factor (1.031)*

**U Raghavendra**, Hamido Fujita, Anjan Gudigar, Ranjan Shetty, Krishnananda Nayak, Umesh Pai, Jyothi Samanth, U Rajendra Acharya, Automated technique for coronary artery disease characterization and classification using DD-DTDWT in ultrasound images, *Biomedical Signal Processing and Control*, vol. 40, pp. 324-334, 2017. *Impact Factor (2.214)*

U Rajendra Acharya, Hamido Fujita, Shu Lih Oh, U Raghavendra, Jen Hong Tan, Muhammad Adam, Arkadiusz Gertych, Yuki Hagiwara, Automated identification of shockable and non-shockable life-threatening ventricular arrhythmias using convolutional neural network, *Future Generation Computer Systems*, Elsevier, 2017. DOI: [doi.org/10.1016/j.future.2017.08.039](https://doi.org/10.1016/j.future.2017.08.039)  
*Impact Factor (3.999)*

Anjan Gudigar, Shreesha Chokkadi, **U Raghavendra**, U Rajendra Acharya, An efficient traffic sign recognition based on graph embedding features, *Neural Computing and Applications*, Springer, 2017. DOI: 10.1007/s00521-017-3063-z. *Impact Factor (2.5)*

Joel EW Koh, U Rajendra Acharya, Yuki Hagiwara, **U Raghavendra**, Jen Hong Tan, S Vinitha Sree, Sulatha V Bhandary, A Krishna Rao, Sobha Sivaprasad, Kuang Chua Chua, Augustinus Laude, Louis Tong, Diagnosis of Retinal Health in Digital Fundus Images Using Continuous Wavelet Transform (CWT) and Entropies, *Computers in Biology and Medicine*, Vol. 84, Pages 89–97, 2017. *Impact Factor (1.83)*

U. Rajendra Acharya, Yuki Hagiwara, Joel E. W. Koh, Jen Hong Tan, Sulatha V. Bhandary, A. Krishna Rao, **U. Raghavendra**, Automated Screening Tool for Dry and Wet Age-Related Macular Degeneration (ARMD) Using Pyramid of Histogram of Oriented Gradients (PHOG) and Nonlinear Features, *Journal of Computational Science*, Elsevier, 20, pages. 41-51, 2017. *Impact Factor (1.74)*

Anjan Gudigar, Shreesha Chokkadi, **U Raghavendra**, U Rajendra Acharya,

Local Texture Patterns for Traffic Sign Recognition using Higher Order Spectra, **Pattern Recognition Letters, Elsevier, 2017. DOI: 10.1016/j.patrec.2017.02.016. Impact Factor (2.0)**

**U Raghavendra**, U Rajendra Acharya, Anjan Gudigar, Jen Hong Tan, Hamido Fujita, Yuki Hagiwara, Filippo Molinari, Pailin Kongmebhol, Kwan Hoong Ng, Fusion of spatial gray level dependency and fractal texture features for the characterization of thyroid lesions, **Ultrasonics, Elsevier, Vol. 77, Pages. 110-120, 2017. Impact Factor (2.32)**

**U Raghavendra**, U Rajendra Acharya, Anjan Gudigar, Ranjan Shetty, N Krishnananda, Umesh Pai, Jyothi Samanth, Chaithra Nayak, Automated screening of congestive heart failure using variational mode decomposition and texture features extracted from ultrasound images, **Neural Computing and Applications, Springer, 28 (10), page. 2869–2878, 2017. Impact Factor (2.5)**

U Rajendra Acharya, **U Raghavendra**, Hamido Fujita, Yuki Hagiwara, Joel EW Koh, Tan Jen Hong, Vidya K Sudarshan, Anushya Vijayanathan, Chai Hong Yeong, Anjan Gudigar, Kwan Hoong Ng, Automated Characterization of Fatty Liver Disease and Cirrhosis Using Curvelet Transform and Entropy Features Extracted from Ultrasound Images, **Computers in Biology and Medicine, Elsevier, Volume. 79, pages 250-258, 2016. Impact Factor (1.83).**

**U Raghavendra**, U Rajendra Acharya, Hamido Fujita, Anjan Gudigar, Shreesha Chokkadi, Application of Gabor Wavelet and Locality Sensitive Discriminant Analysis for Automated Identification of Breast Cancer Using Digitized Mammogram Images, **Applied Soft Computing Elsevier, Vol. 46, pages 151–161, 2016. Impact Factor (3.54)**

**U. Raghavendra**, U. Rajendra Acharya, E. Y. K. Ng, Jen-Hong Tan, Anjan Gudigar, An Integrated Index for Breast Cancer Identification using Histogram of Oriented Gradient and Kernel Locality Preserving Projection Features Extracted from Thermograms, **Quantitative Infrared Thermography Journal, Volume 13, Number 2, pages 195-209, 2016. Impact Factor (1.06)**

Anjan Gudigar, Shreesha Chokkadi, **U. Raghavendra**, U Rajendra Acharya,

Multiple thresholding and subspace based approach for detection and recognition of traffic sign, **Multimedia Tools and Applications, Springer**, 2016. DOI 10.1007/s11042-016-3321-6. *Impact Factor (1.5)*

U. Rajendra Acharya, Hamido Fujita, Shreya Bhat, **U. Raghavendra**, Anjan Gudigar, Filippo Molinari, Anushya Vijayanathan, Kwan Hoong Ng, "Decision support system for fatty liver disease using GIST descriptors extracted from ultrasound images", **Information Fusion, Elsevier**, Vol. 29, May 2016, Pages 32-39. *Impact Factor (5.66)*

**Raghavendra U**, Krishnamoorthi Makkithaya and Karunakar A K, "Anchor Diagonal Based Adaptive Local Support Region for Efficient Stereo Matching", **Signal, Image and Video Processing, Springer**, Vol.7, No. 4, July 2013. *Impact Factor (1.1)*

Anjan Gudigar, Shreesha Chokkadi and **Raghavendra U**, "A review on automatic detection and recognition of traffic sign", **Multimedia Tools and Applications, Springer**, October- 2013, DOI: 10.1007/s11042-014-2293-7. *Impact Factor (1.34)*

**Raghavendra U**, Krishnamoorthi Makkithaya and Karunakar A K, "Structural Similarity Based Ranking of Stereo Algorithms for Dynamic Adaptation in Real-Time Robot Navigation", **Journal of Computational Vision and Robotics, InderScience**, Vol. 4, No. 4, pp. 281-293, 2014.

**BOOK CHAPTER** Hamido Fujita, **U. Raghavendra**, Anjan Gudigar, Vinoy Vishnu Vadakkepat And U. Rajendra Acharya, Automated Characterization of Breast Cancer using Steerable Filters, SoMeT 2017: 321-327.

Abhilash K Pai, AK Karunakar, U Raghavendra, A novel crowd density estimation technique using local binary pattern and Gabor features, 14th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Italy, 2017.

**CONFERENCE PROCEEDINGS** **Raghavendra U**, Krishnamoorthi Makkithaya, Karunakar A K, "Qualitative and Quantitative Evaluation of Correlation Based Stereo Matching Algorithms", Lecture Notes in Computer Science, Springer Berlin / Heidelberg, International Conference on Advanced Computing, Networking

and Security, pp. 242- 252, 16th December 2011, **NITK, Surthkal**.

**Raghavendra U**, Krishnamoorthi Makkithaya, Karunakar A K, “Entropy Based Log Chromaticity Projection for Real-time Stereo Matching”, International Conference on Communication, Computing and Security (ICCCS’12), Vol. 6, pp. 223 to 230 October 6th – 8th 2012 at NIT, Rourkela published by Procedia Technology (**Elsevier**).

**Raghavendra U**, Krishnamoorthi Makkithaya, Karunakar A K, “Range Structural Similarity Index for Evaluation of Stereo Disparity under Radiometric Variations”, ERC Co-located workshop in **ICVGIP, IIT Bombay** Dec 2012.

**Raghavendra U**, Krishnamoorthi Makkithaya and Karunakar A K, “Modified Census Correlation Data Cost for Stereo Matching Under Non-Ideal Illumination” International Conference on Multimedia Processing, Communication and Information Technology - MPCIT 2013 pp. 223-227, India.

**Raghavendra U**, Krishnamoorthi Makkithaya and Karunakar A. K, "Illumination Invariant Stereo Data Cost Using Modified Census Transform", IJCA Proceedings on National Conference on Recent Advances in Information Technology NCRAIT (2):38-41, February 2014. Published by Foundation of Computer Science, New York, USA. (**Received best paper award**)

Akshatha K R, Anitha H, Karunakar A K, **Raghavendra U**, Dinesh Shetty, “Source Camera Identification Using Wavelet Feature Fusion Technique” International Conference on Multimedia Processing, Communication and Information Technology - MPCIT 2013, pp. 257-263, India.

**Raghavendra U**, P K Mahesh, Anjan Gudigar, “A Novel Face Recognition Method using PCA, LDA and Support Vector Machine”, CCSIT, Springer Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Vol.85, pp-241-249, 2012.

Anjan Gudigar, B N Jagadale, Mahesh P K and **Raghavendra U**, “Kernel

based Traffic Sign Detection and Recognition Using SVM”, ICECCS, Springer Communications in Computer and Information Science, pp.153-161, 2012.

**CURRENT  
RUNNING  
PROJECTS**

Computer Aided Diagnosis and Analysis for Breast Cancer, Early Detection and Recognition of ongoing abnormal activities using dense stereo analysis, Thyroid Cancer Detection and Analysis.

**KEY INTEREST**

Digital Image Analysis, Stereo Vision, Energy Minimization Techniques, Optimization Techniques, Crowd Scene Analysis, Feature Extraction and Analysis, Decision Support System Design, Face Recognition System, Traffic Sign Recognition Systems, Machine learning and Classification.

**INVITED  
TALKS/GUEST  
LECTURE/  
SESSIONS  
CHAired**

Session Chair in the **Control Instrumentation System Conference** held at Manipal Institute of Technology, Manipal from 3<sup>rd</sup> to 4<sup>th</sup> November 2015.

Guest talk on “**Stereo Vision for Object Detection and Tracking: Current Trends and Challenges**” at National Conference on Signal and Image Processing, NCSI (2015), VCET, Puttur, on 1<sup>st</sup> May, 2015.

Session Chair in the **Control Instrumentation System Conference** held at Manipal Institute of Technology, Manipal from 7<sup>th</sup> to 8<sup>th</sup> November 2014.

Delivered a talk on “**Object Detection and Tracking Using Stereo Vision: Future Trends**”, in International Conference on Multimedia Processing, Communication and Information Technology - MPCIT, at JNNCE Shimoga, India, 2013.

Resource person for the workshop titled “**Technical Document Preparation Using Latex**” held at MCIS, Manipal, India, 2012.

**Thesis  
Reviewed**

1. Lossless Data Hiding by Reserving Space Before Encryption, 2015.  
(M. Tech.)
2. Irregular Pixel Imaging, 2015.  
(M. Tech.)
3. Wavelet Based Denoising of ECG Signal Using Optimization Approach, 2015. (M. Tech.)

**Professional Organizations memberships**

1. ISTE Life Member (LM No:62766)
2. IEEE Member (M No:90503763)

**Web links**

**ResearcherID: G-8634-2015**

**ORCID ID: 0000-0002-1124-089X**

**ResearchGate**

[http://www.researchgate.net/profile/Raghavendra\\_U](http://www.researchgate.net/profile/Raghavendra_U)

**Google Scholar Citations:**

<http://scholar.google.com/citations?hl=en&user=3nzcDREAAAIAJ>

**Linkedin:**

<http://www.linkedin.com/profile/view?id=83096713>

**DBLP:**

<http://dblp.uni-trier.de/pers/hd/r/Raghavendra:U=>

**Scopus:**

<https://www.scopus.com/authid/detail.uri?authorId=37079412500>

**Pure, Elsevier:**

<https://manipal.pure.elsevier.com/en/persons/raghavendra-u>