Girish G N (Girish Gududappanavar Nagarajappa)

CONTACT INFORMATION	Assistant Professor (Grade-1)	
	Department of Computer Science & Engineering	Cell: +91-9844289249
	Indian Institute of Information Technology Dharwad	girishanit@gmail.com
	Ittigatti Road, Dharwad, India-580009	girish@iiitdwd.ac.in
	Web Links: *Google Scholar*, *LinkedIn*	

RESEARCH INTERESTS

Image processing and computer vision, medical image analysis, optical coherence tomography, object recognition, machine learning and deep learning.

EDUCATION

Ph.D. in Computer Science and Engineering, Oct 2018
National Institute of Technology Karnataka, Surathkal, India

- Area of Research: *Image Processing (Retinal Image Analysis)*
- Thesis Title: *AUTOMATIC SEGMENTATION OF INTRA-RETINAL CYSTS FROM OPTICAL COHERENCE TOMOGRAPHY SCANS*
- Advisor: Dr. Jeny Rajan

Master of Technology in Computer Science and Engineering, Sep 2014
Visvesvaraya Technological University (VTU), Belgaum, India

- University B.D.T. College of Engineering, Davanagere, India
- Area of Research: *Biometrics and Image Processing*
- Thesis Title: *A Comparative Study on Face Recognition Using MB-LBP and PCA*

Bachelor of Engineering in Computer Science and Engineering, May 2012

- J.N.N. College of Engineering, Shimoga, India
- Area of Research: *Image Processing (Retinal Image Analysis)*
- Major Project Title: *Fingerprint Recognition System*

EXPERIENCE

Assistant Professor (Grade-1)   May 2024-till date
Department of Computer Science and Engineering
Indian Institute of Information Technology Dharwad (IIIT Dharwad), Dharwad, India

Assistant Professor   Dec 2020-May 2024
Computer Science and Engineering Group
Indian Institute of Information Technology Sri City (IIIT Sri City), Chittoor, India

Postdoctoral Research Fellow   Aug 2019 to Dec 2020
Harvard Medical School, Harvard University
Wellman Center for Photomedicine
Massachusetts General Hospital, Boston, USA. **Title of Project:** Analysis of gastrointestinal image biomarkers for early detection of malnourished patients..
Principal Investigator: Prof. Guillermo (Gary) J. Tearney

Senior Engineer, ADAS Sensorics   Mar 2019 to Jun 2019
Autonomous Driving Assistance Systems Devision,
Continental Automotive Components (India) Pvt. Ltd., Bangalore, India

Assistant Lecturer   July 2018 to Mar 2019
Department of Computer Science and Engineering,
National Institute of Technology Karnataka, Surathkal, India

Research Scholar   Dec 2014 to Jul 2018
Department of Computer Science and Engineering,
National Institute of Technology Karnataka, Surathkal, India
Supervisor: Dr. Jeny Rajan

Project Associate Oct 2014 to Dec 2014

Karnataka State Council for Science and Technology (KSCST), Indian Institute of Science (IISc) Campus, Bangalore, India.

Title of Project: Implementation of Virtual Laboratory (VL) to improve the quality of education in the backward taluks of Karnataka.

PUBLICATIONS **Journal Publications**

1. Aayushi Padia, Aryan T. N., Sharan Thummagunti, Vivaan Sharma, Manjunath K. Vanahalli, Prabhu Prasad B. M., **Girish G. N.**, Yong-Guk Kim, and Pavan Kumar B. N., "Object Detection and Classification Framework for Analysis of Video Data Acquired from Indian Roads", Sensors, 24, no. 19: 6319, MDPI, 2024. **(Impact Factor: 3.4)**

2. M. Rahil, B. N. Anoop, **G. N. Girish**, A. R. Kothari, S. G. Koolagudi and J. Rajan, "A Deep Ensemble Learning-Based CNN Architecture for Multiclass Retinal Fluid Segmentation in OCT Images," in IEEE Access, vol. 11, pp. 17241-17251, IEEE, 2023. **(Impact Factor: 3.9)**

3. Anoop B. N., Kaushik S. Kalmady, Akhil Udathu, Siddharth V., **G. N. Girish**, Abhishek R. Kothari, and Jeny Rajan, "A Cascaded Convolutional Neural Network Architecture for Despeckling OCT Images", *Biomedical Signal Processing and Control*, Volume 66, 102463 Elsevier, 2021. **(Impact Factor: 5.1)**

4. Anoop B. N., Rakesh Pavan, **G. N. Girish**, Abhishek R. Kothari, and Jeny Rajan, "Stack generalized deep ensemble learning for retinal layer segmentation in optical coherence tomography images", *Biocybernetics and Biomedical Engineering*, Volume 40, Issue 4, pages 1343-1358, Elsevier, 2020. **(Impact Factor: 6.4)**

5. **G. N. Girish**, Abhishek R. Kothari, and Jeny Rajan, "Marker controlled watershed transform for intra-retinal cysts segmentation from optical coherence tomography B-scans", *Pattern Recognition Letters*, Volume 139, pages 86-94, Elsevier, 2020. **(Impact Factor: 5.1)**

6. **G. N. Girish**, Bibhash Thakur, Sohini Roychowdhury, Abhishek R. Kothari, and Jeny Rajan, "Segmentation of Intra-Retinal Cysts from Optical Coherence Tomography Images using a Fully Convolutional Neural Network Model", *IEEE Journal of Biomedical and Health Informatics*, vol. 23, no. 1, pp. 296-304, IEEE, Jan. 2019. **(Impact Factor: 7.7)**

7. **G. N. Girish**, V. A. Anima , Abhishek R. Kothari, P. V. Sudeep, Sohini Roychowdhury, and Jeny Rajan, "A Benchmark Study of Automated Intra-retinal Cyst Segmentation Algorithms using Optical Coherence Tomography B-Scans". *Computer Methods and Programs in Biomedicine*, Volume 153, pages 105-114, ISSN 0169-2607, Elsevier, 2018. **(Impact Factor: 6.1)**

Conference Publications

1. Pasupuleti, Hemanth, Abhishek R. Kothari, and **G. N. Girish**. "Unsupervised Image to Image Translation for Multiple Retinal Pathology Synthesis in Optical Coherence Tomography Scans." International Conference on Computer Vision and Image Processing, Nagpur, India, Springer Nature, 2022.

2. Anoop B. N,. Saswat Parida, Ajith B, **G. N. Girish**, Abhishek R. Kothari, Muthu Subash Kavitha, Jeny Rajan (2021, December), "Attention Assisted Patch-wise CNN for the Segmentation of Fluids from the Retinal Optical Coherence

Tomography Images", In 9th International Conference on Pattern Recognition and Machine Intelligence (PReMI'21) December 15 - 18, 2021 Kolkata, India, Springer LNCS. **(Presented and Awarded as IAPR Best Paper)**

3. Dhanesha, R., Umesha, D. K., Naika, C. S., & **G. N. Girish**, "Segmentation of Arecanut Bunches: a Comparative Study of Different Color Models". In 2021 IEEE Mysore Sub Section International Conference (MysuruCon) (pp. 752-758). IEEE, 2021.

4. **G. N. Girish**, Leon Alarcon, Paola A., Barrios, Amilcar, David O. Otuya, Jing Dong, Sarah L. Giddings, Nitasha G. Mudalaje, Catriona N. Grant, Joseph A. Gardecki, Norman Nishioka, Christopher Damman and Guillermo J. Tearney, "Non-invasive tethered capsule endomicroscopy imaging biomarkers for the diagnosis of the celiac disease from unsedated patients", in *Endoscopic Microscopy XVI. Vol. 11620. International Society for Optics and Photonics, SPIE,* Mar 2021.

5. **G. N. Girish**, Banoth Saikumar, Sohini Roychowdhury, Abhishek R. Kothari and Jeny Rajan, "Depth-wise Separable Convolutional Neural Network Model for Segmentation of Intra-Retinal Cysts from Optical Coherence Tomography Images", in *41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'19).* Berlin, Germany: IEEE, Jul 2019.

6. Narendra Rao T. J., **G. N. Girish**, Abhishek R. Kothari and Jeny Rajan, "Deep Learning Based Sub-Retinal Fluid Segmentation in Central Serous Chorioretinopathy Optical Coherence Tomography Scans", in *41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'19).* Berlin, Germany: IEEE, Jul 2019.

7. Guru Pradeep Reddy T., Kandiraju Sai Ashritha, Prajwala T. M., **G. N. Girish**, Abhishek R. Kothari, Shashidhar G. Koolagudi, and Jeny Rajan, "Retinal Layer Segmentation using Dilated Convolutions", in *Third International Conference on Computer Vision and Image Processing (CVIP-2018).* IIITDM Jabalpur, INDIA: Springer, Sep 2018.

8. **G. N. Girish**, Abhishek R. Kothari, and Jeny Rajan, "Automated Segmentation of Intra-Retinal Cysts from Optical Coherence Tomography Scans Using Marker Controlled Watershed Transform", in *38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'16).* Orlando, Florida, USA: IEEE, Aug 2016.

9. Sooraj Kumar R., **G. N. Girish**, Pavin B. Ramteke, Shreyas S. Joshi, and Shashidhar G. Koolagudi, "Text Independent Automatic Accent Identication System for Kannada Language", in *International Conference on Data Engineering and Communication Technology (ICDECT-2016).* Pune, INDIA: Springer, Mar 2016.

10. Narendra Rao T. J., **G. N. Girish**, and Jeny Rajan, "An Improved Contextual Information Based Approach for Anomaly Detection via Adaptive Inference for Surveillance Application", in *International Conference on Computer Vision and Image Processing (CVIP-2016).* IIT Roorkee, INDIA: Springer, Feb 2016. **(Awarded as International Association for Pattern Recognition (IAPR) Best Student Paper)**

11. **G. N. Girish**, S. Naika C. L., and P. K. Das, "Effect of Modified Convolution on Local Descriptor Based Face Recognition", in *Eighth International Multi Conference on Information Processing (IMCIP-2014).* Bangalore, INDIA: Elsevier, July 2014.

12. **G. N. Girish**, S. Naika C. L., and P. K. Das, "Face recognition using MB-LBP and PCA: A comparative study", in *International Conference on Computer Communication and Informatics (ICCCI -2014)*. Coimbatore INDIA: IEEE, January 2014.

Book Chapters

1. Narendra Rao T. J., **G. N. Girish**, Mohit P. Tahiliani, and Jeny Rajan, "Anomalous Event Detection Methodologies for Surveillance Application - An Insight", *Handbook of Research on Advanced Concepts in Real-Time Image and Video Processing*, pages=1–27, IGI Global Publishers, 2017.

2. Anoop B. N., **G. N. Girish**, P. V. Sudeep, and Jeny Rajan, "Despeckling Algorithms for Optical Coherence Tomography Images: A Review", *Advanced Classification Techniques for Healthcare Analysis*, pages=286–310, IGI Global Publishers, 2019.

PATENTS

1. *US Patent:* Tearney G. J., G. N. Girish, and David O. Otuya. "System and method for diagnosing celiac disease." U.S. Patent Application No. 18/548,951. The General Hospital Corporation (MGH), Patent Published and Grant Application in Communication. Application filed: 07-03-2022: Publication No and Date: US20240153084A1 & 09-05- 2024.

2. *EU Patent:* Tearney G. J., G. N. Girish, and David O. Otuya. "System and method for diagnosing celiac disease." E.U. Patent Application No. EP22764212A. The General Hospital Corporation (MGH), Patent Published and Grant Application in Communication. Application filed: 07-03-2022: Publication No and Date: EP4301211A1 & 10-01-2024.

3. *JP Patent:* Tearney G. J., G. N. Girish, and David O. Otuya. "System and method for diagnosing celiac disease." J.P. Patent Application No. JP2023553612A. The General Hospital Corporation (MGH), Patent Published and Grant Application in Communication. Application filed: 07-03-2022: Publication No and Date: JP2024515431A & 10-04-2024.

AWARDS

- **Postdoctoral Fellowship, Harvard Medical School, Harvard University, USA** Aug 2018
- **Department of Biotechnology, Govt. of India - Travel Grant Award 2016** for attending 38th IEEE Annual International Conference of the Engineering in Medicine and Biology Society at Orlando, USA Aug 2016
- **International Association for Pattern Recognition (IAPR) Best Student Paper** at CVIP-2016, IIT Roorkee Feb 2016
- **MHRD Fellowship for PhD, Ministry of Education, Govt. of India** Dec 2014

SEMINARS/ WORKSHOPS/ FDP DELIVERED:

- Delivered Lecture on Five Days STTP on "*Applications of Data Mining and Deep Learning Techniques in Multidisciplinary Area*" held at National Institute of Technology Karnataka, Surathkal, India in the year 2019.
- Delivered Lecture on Five Days "*Summer School on Deep Learning*" held at National Institute of Technology Karnataka, Surathkal, India in the year 2019.
- Delivered Invited Talk on "*Artificial Intelligence for Eye Health Care: An Insight*" organized by Institution of Engineers-Mangalore Center, Mangalore, India in the year 2018.

- Delivered Lectures on Six Days Faculty Development Program on "*Python Programming*" held at SJBIT, Bangalore, India in the year 2017.
- Delivered Lecture on One Day Faculty Development Program on "*Image processing*" held at NMAMIT, Nitte, India in the year 2016.
- Delivered Lectures on Two Days Faculty Development Program on "*Image processing*" held at VDRIT, Haliyal, India in the year 2016.

PROFESSIONAL MEMBERSHIPS:	Member, IEEE Engineering in Medicine and Biology Society (IEEE EMBS).
	Member, IEEE
	Member, IEEE Biometric Council
	Member, SPIE (International Society for Optics and Photonics)

SERVICE

Organization/Institute Administration

Institute: IIIT Sri City

- Assistant Dean (UG Programmes-Academics)	July 2023- Jan 24
- M.Tech Coordinator (PG Programmes-Academics)	May 2021- May 24
- Member-BTech in AI & DS Programme curriculum preparation committee	May 2023- Jun 24
- AIML Specialisation Coordinator (UG Programmes-Academics)	Jun 2023- Jan 24
- Chairmen Class Committee- MTech 1st Year courses	AY 2023-24
- Chairmen Class Committee- UG 2nd Year courses	AY 2022-23
- Faculty Advisor-EPOCH (AIML) student club	Sep 2021- May 24
- MTech Admission committee	AY 2022 & AY 2021
- PG Admissions C.C.M.T. Coordinator	AY 2021
- Institute Outcome Based Education (OBE) Committee	2021-24

Journal Referee:
IEEE Transactions on Medical Imaging, IEEE Journal of Biomedical and Health Informatics, Computer Methods and Programs in Biomedicine, Computers in Biology and Medicine, and IETE Technical Review, IEEE Access.

Thesis Supervised:
Under Graduate Level - 9; Post Graduate Level - 2, Doctoral -2 (on going)

Visiting Professorships:
Visiting Faculty, KREA University (formerly known as IFMR), Sri City for AY 2021-22, AY 2022-23 and AY 2023-24. Courses Taught: Principles of Machine Learning and Principles of Artificial Intelligence

COURSES TAUGHT **Undergraduate**

- Healthcare Data Analytics	Monsoon 2024
- Artificial Intelligence	Monsoon 2024, Spring 2024, Spring 2023, Spring 2022
- Machine Learning	Spring 2021, Monsoon 2022, Monsoon 2023
- Medical Image Analysis	Monsoon 2023
- Deep Learning	Monsoon 2021
- Data Structures and Algorithm	Spring 2021, Spring 2023
- Advanced Data Structures and Algorithm	Monsoon 2021

Postgraduate:

- Machine Learning	Monsoon 2021, Monsoon 2022
- Deep Learning	Spring 2021

REFERENCES

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Prof. Guillermo J. Tearney
Remondi Family Endowed MGH Research Institute Chair Prof. of Pathology
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Harvard Medical School and Massachusetts General Hospital
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San Francisco Bay Area, CA, USA.
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