

# Ujjwal Verma (Senior Member, IEEE)

## Associate Professor and Head,

Department of Electronics and Communication Engg,  
Manipal Institute of Technology, Bengaluru  
*Manipal Academy of Higher Education, Udupi, India*  
(On deputation from Manipal Institute of Technology, Manipal)

**Associate Editor**, IEEE Geoscience and Remote Sensing Letters (SCI Journal)

**Co-Chair**, Working Group on Machine/Deep Learning for Image Analysis, Image Analysis and Data Fusion Technical Committee (IADF TC) of *IEEE Geoscience and Remote Sensing Society (GRSS)*

**Sectional Recorder**, Information and Communication Science and Technology (including Computer Science) Section, Indian Science Congress Association (Professional Body under Department of Science and Technology, Government of India).

Email: [ujjwal.verma@manipal.edu](mailto:ujjwal.verma@manipal.edu)

LinkedIn: <https://www.linkedin.com/in/ujjwalverma/>

Website: <https://uverma.github.io>

Google Scholar:  
<https://scholar.google.com/citations?user=XSzIFlgAAAAJ>  
OrCID: <https://orcid.org/0000-0002-6133-5379>

H-Index: 12 (Scopus), i10-index: 16



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## Research Interests

- Computer Vision and Machine Learning for Earth Observation Images: Self Supervised Learning, Few-Shot Learning, Semantic Segmentation and Classification of UAV and satellite images and video, and deep learning tailored for Earth Observation.

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## Education

- **PhD in Signal and Image Processing** | Telecom ParisTech (Institut Polytechnique de Paris), University of Paris-Saclay, France (**QS World University Ranking 2025: 46**)

Dec 2010- March 2014

  - Dissertation Topic: “Analysis of Images in Precision Agriculture: Monitoring the Growth of Tomatoes”
  - Advisor: Isabelle Bloch and Florence Rossant
- **M.S. (Research) in Signal and Image Processing** | Telecom Bretagne, University of Rennes-1, France

Sept 2008-Sept 2010
- **B.Tech in Electronics and Communication Engineering** | Jaypee University of Information Technology, India

Aug 2004-May 2008

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## Honors and Awards

- Received “**ISCA Young Scientist Award 2017-18**” by Indian Science Congress Association (Professional Body under Department of Science and Technology, Government of India) at 105th Session of Indian Science Congress, Imphal on 20th March 2018.
- Received “**Young Professional Volunteer Award 2020**” by IEEE Mangalore Sub-Section in recognition of my outstanding contribution to IEEE activities.

- Our Team secured **first place in Social Media Mining for Health Applications (SMM4H)** (Task 1) challenge organized at 2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics NAACL 2021 (**CORE Rank: A**).

## Patents

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- Patent Application Titled “A Method and System for Anomaly Detection in Aerial Surveillance Videos” filed at Indian Patent Office on 28<sup>th</sup> February 2022, with application number: 202241010616. Inventors: Manohara Pai, Girisha S, **Ujjwal Verma**, and Radhika Pai (Current Status: Published)
- Patent Application Titled “A Method and System for Tracking and Detection of Aquatic Animals” filed at Indian Patent Office on 28<sup>th</sup> February 2022, with application number: 202241010629. Inventors: Manohara Pai, Shreesha S, Radhika Pai and **Ujjwal Verma** (Current Status: Published)

## Selected Publications (Full List Available at Scopus/WoS/Google Scholar)

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- Highlights:
  - Average Impact Factor: 7.2
  - Publications in top Computer Vision/Machine Learning Conferences (**NeurIPS/NAACL/ICLR/CVPR Workshop/IGARSS**) and Journals (IEEE Geoscience and Remote Sensing Magazine, IEEE JSTARS)
  - **Best paper awards** in International Conferences (IEEE Region 10 Conference, IEEE DISCOVER) and by our University (Manipal Center for Infectious Disease)
  - Several publications and other activities (Lead Editor of Special Issue, Organizer of International Summer School, and Workshops) with international collaborations (German Space Agency, Oak Ridge National Laboratory (USA))
  - Consultancy work with Cleed, France featured in **Forbes Magazine** (France Edition, Winter 2018-19) which termed Cleed as the “next Spotify/Deezer of the fashion world”.
- Michael Schmitt, Seyed Ahmadi, Yonghao Xu, Gulsen Taskin, **Ujjwal Verma**, Francescopaolo Sica, Ronny Hansch, There Is No Data Like More Data – Datasets for Deep Learning in Earth Observation, *IEEE Geoscience and Remote Sensing Magazine*, vol. 11, no. 3, pp. 63-97, Sept. 2023, doi: 10.1109/MGRS.2023.3293459 (**SCI, Impact Factor: 14.6**) (**Featured on cover page of Sept 2023 issue**)
- Gokul P, **Ujjwal Verma**, Texture based prototypical network for few-shot semantic segmentation of forest cover: Generalizing for different geographical regions, *Neurocomputing*, Volume 538, 2023, 126201. doi: 10.1016/j.neucom.2023.03.062 (**SCI, Impact Factor: 6**)
- Dalton Lunga, Silvia Ullo, **Ujjwal Verma**, George Percivall, Fabio Pacifici, Ronny Hansch, ARD and FAIR-AI – Standardization of Research Collaboration and Transparency across EO communities, *IEEE Geoscience and Remote Sensing Magazine*, vol. 11, no. 2, pp. 89-92, June 2023, doi: 10.1109/MGRS.2023.3267904 (**SCI, Impact Factor: 14.6**)
- Ashutosh Holla, Manohara Pai MM, **Ujjwal Verma**, and Radhika M Pai, MSFFT: Multi-Scale Feature Fusion Transformer for cross platform vehicle re-identification, *Neurocomputing*, Volume 582, 2024, 127514. (**SCI, Impact Factor: 6**)
- Girisha S\*, **Ujjwal Verma\***, Manohara Pai, and Radhika Pai, “UVID-Net: Enhanced Semantic Segmentation of UAV Aerial Videos by Embedding Temporal Information”, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 14, pages 4115-4127, 2021, doi = 10.1109/JSTARS.2021.3069909 (**SCI, Impact Factor: 4.7**) (\* = Equal Contribution)
- **Ujjwal Verma**, Arjun Chauhan, Manohara Pai and Radhika Pai, “DeepRivWidth : Deep Learning based Semantic Segmentation approach for River Identification and Width Measurement in SAR Images of Coastal Karnataka”, *Computers and Geosciences*, vol 154, 2021, 104805. (**SCI, Impact Factor: 5.16**)
- Anusha Prabhu, Giri Nandgopal, Prakash Yagneswaran, Vijendra Prabhu, **Ujjwal Verma** and Naresh Mani, “Thread integrated smart-phone imaging facilitates early turning point colorimetric assay for microbes”, *RSC*

*Advances*, vol. 10 (45), pp. 26853-26861, 2020, Royal Society of Chemistry. **(SCI, Impact Factor: 4.03) (Best Publication Award by Manipal Center for Infectious Disease, MAHE)**

- **Ujjwal Verma**, Florence Rossant and Isabelle Bloch, Segmentation and size estimation of tomatoes from sequences of paired images, *EURASIP Journal on Image and Video Processing*, Springer, vol 2015, no. 1, p. 1-33, 2015. **(SCI, Impact Factor: 2.4)**
- Kumud Lakara, Akshat Bhandari, Pratinav Seth, and **Ujjwal Verma**, Evaluating Predictive Uncertainty and Robustness to Distributional Shift Using Real World Data, *Bayesian Deep Learning Workshop at Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS 2021)*.
- Shreesha S, **Ujjwal Verma**, Manohara Pai, and Radhika Pai, Fish Tracking and Unsupervised Fish Behaviour Analysis of Silago Sihama, *CV4Animals Workshop at IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR) 2022*.
- Sidharth R, Abhiraj Tiwari, Parthivi Choubey, Saisha Kashyap, Sahil Khose, Kumud Lakara, Nishesh Singh, and **Ujjwal Verma**. "BERT based Transformers lead the way in Extraction of Health Information from Social Media." *In Proceedings of the Sixth Social Media Mining for Health (#SMM4H) Workshop and Shared Task, 2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2021)*, Mexico City, Mexico pp. 33-38. 2021. **(CORE Rank: A)**
- Sankarshanaa Sagaram, Aditya Kasliwal, Krish Didwania, Laven Srivastava, Pallavi Kailas, and **Ujjwal Verma**, SolarPanel Segmentation: Self-Supervised Learning for Imperfect Datasets, *The Second Tiny Paper Track at International Conference on Learning Representations (ICLR) 2024*, Vienna, Austria.
- Shreesha S, Manohara Pai, **Ujjwal Verma**, Radhika Pai, and Girisha S, Behavioural Pattern Analysis of Fishes for Smart Aquaculture: An Object Centric Approach, *TENCON 2021 - 2021 IEEE Region 10 Conference (TENCON), 2021, Auckland, New Zealand, pp. 917-922. (Best Paper Award)*

## WORK EXPERIENCE

Oct 2021 - Present	Associate Professor and Head, Department of Electronics and Communication Engineering, Manipal Institute of Technology, Bengaluru Campus	<ul style="list-style-type: none"> <li>• Deputed for 3 years to the newly established engineering college of our university (MAHE) in Bengaluru.</li> <li>• As Head of the newly created department, entrusted with the responsibility of establishing department, designing the course curriculum, recruitment of teaching/non-teaching staff, and setting up the infrastructure.</li> <li>• Designed the course structure and started two new BTech programs in our department. The two courses are BTech in Electronics Engg (VLSI Design and Technology) and BTech in Electronics and Computer Engg.</li> <li>• Designed the course structure and started a certificate program on fundamentals of machine learning for healthcare professionals in collaboration with Aster CMI hospital, Bangalore</li> </ul>
Sept 2019 - Present	Associate Professor, Department of Electronics and Communication Engineering, Manipal Institute of Technology, India	<ul style="list-style-type: none"> <li>• Includes under-graduate and post-graduate teaching and research</li> </ul>

<b>July 2014 – Aug 2019</b>	<b>Assistant Professor, Department of Electronics and Communication Engineering,</b> Manipal Institute of Technology, India	<ul style="list-style-type: none"> <li>Designed the syllabus and introduced two new elective courses on Computer Vision in consultations with experts from academia and industry</li> <li><b>Supervised three and Supervising one Ph.D. research scholars in Computer Vision and Machine Learning.</b></li> </ul>
<b>Aug 2018 – Aug 2019</b>	<b>Assistant Director (Research and Consultancy),</b> Manipal Institute of Technology, India	<ul style="list-style-type: none"> <li>Additional administrative responsibility to promote and coordinate interdisciplinary research within the university.</li> <li>Initiated several reforms and the total number of Scopus indexed publications increased by 38%.</li> </ul>

### **Funded Projects**

<b>Title of the Project</b>	<b>Funding Agency</b>	<b>Amount</b>	<b>Duration</b>
Design and Development of Computer Vision Algorithms for Augmented Reality Instruction Manuals	Spatial Guide, Hyderabad, India (Consultancy Project)	Rs 20 Lakhs	2023-Present
Apparel classification for Intelligent Shopping Assistant	Cleed, Paris, France (International Consultancy Project)	Euro 10,000	2017 - Ongoing
Engineering Miniaturized Paper-based Analytical Devices for Point-of-Care (POC) diagnosis of <i>Candidiasis</i> .	Vision Group on Science and Technology, Govt of Karnataka, and Manipal McGill Center for Infectious Diseases (Center of Excellence established by Manipal University, India and McGill University, Montreal, Canada).	INR 7 Lakhs	2019-2021

- Awarded Travel Grant by IEEE Geoscience and Remote Sensing Society** to attend and present paper at 43rd IEEE International Geoscience and Remote Sensing Symposium (IGARSS) 2023, in Pasadena, USA.  
Total Award Amount: USD 2,220.

### **Numbers of PhD/MTech/BTech Guided/Guiding**

<b>PhD Guided</b>	<b>PhD Guiding</b>	<b>MTech Guided</b>	<b>BTech Guided</b>
03	01	01	21

**Numbers of Different Theory Courses Taught:** UG Level: 07, and PG Level: 02

- Courses on Signal Processing, Computer Vision, Microprocessor, and Computer Organization.

### **Other Activities**

- Lead **Guest Editor**, Special Issue on “Machine Learning in Remote Sensing towards the Sustainable Development Goals” in *IEEE Geoscience and Remote Sensing Letters (SCI, Q1 Impact Factor: 5.34)*. 2022-23
- Chair, Technical Program Committee**, 2023 IEEE India Geoscience and Remote Sensing Symposium (InGARSS). (General Chairs: Dr. Avik Bhattacharya (IIT Bombay), Dr. Jaya Sreevalsan Nair (IIIT Bangalore), Dr. B. S. Daya Sagar (ISI Bangalore)

- Lead **Guest Editor**, Special issue on “IEEE India Geoscience and Remote Sensing Symposium (InGARSS 2023)” in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* (**Impact Factor: 5.5**, SCI, Q1)
- **Organizer, 13<sup>th</sup> IAPR Workshop on Pattern Recognition in Remote Sensing (PRRS)** at International Conference on Pattern Recognition (ICPR) 2024 to be held at ISI, Kolkata from 1<sup>st</sup> -5<sup>th</sup> Dec 2024. Other organizers: Ribana Roscher (Univ of Bonn, Germany), Charlotte Pelletier (Univ. Bretagne Sud, France), Sylvain Lobry (Université Paris Cité, France), Marc Rußwurm (Wageningen University, Netherlands) <https://iapr-tc7.github.io/prrs2024/>
- Organizer, Workshop on Computer Vision for Developing Countries at 17th Asian Conference on Computer Vision to be held at Hanoi, Vietnam from 8-12 Dec 2024. Other organizers: Du Tran (Google), Yannis Kalantidis (NAVER Labs Europe), Cuong Duc Dao (Epidemic Sound, Sweden), Quoc-Huy Tran (Retrocausal AI, US), Phong Nguyen (VinAI, Vietnam), Tuan-Anh Vu (HKUST, Hong Kong), Siddhartha Gairola (Max Planck Institute for Informatics, Germany), Williem (Indonesia). <https://cv4dc.github.io/2024/>
- **Organizer, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> IEEE IADF School on Computer Vision for Earth Observation** at University of Sannio, Benevento (Italy). (Other Organizers : Silvia Ullo (University Of Sannio, Italy), Gemine Vivone (National Research Council, Italy), Ronny Hänsch (German Aerospace Center, Germany), Claudio Persello (University Of Twente, The Netherlands), Gülşen Taşkın (Istanbul Technical University, Turkey), and Dalton Lunga (Oak Ridge National Laboratory, USA) <https://iadf-school.org/>
- Invited to attend July 2024 Administrative Committee meeting of IEEE Geoscience and Remote Sensing Society in Athens, Greece from 4-6 July 2024.
- Reviewer for journals like IEEE Transactions on Image Processing, IEEE Transactions on Geoscience and Remote Sensing, and IEEE Geoscience and Remote Sensing Letters.
- Reviewer for conferences like Neural Information Processing Systems (NeurIPS since 2022), International Conference on Learning Representations (ICLR since 2024), International Conference on Machine Learning (ICML since 2024) and AAAI Conference on Artificial Intelligence (Since 2022).
- Member, Executive Committee, IEEE GRSS Bangalore Chapter (2022-23)
- Treasurer, IEEE GRSS Bangalore Chapter (2024-Present)