Jitesh Joshi

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Professional Summary

Innovative researcher with over a decade of experience in **AI, computer vision**, and **deep learning**, with a proven track record of solving complex challenges at the intersection of **healthcare** and **computer vision**. Published in top-tier venues such as NeurIPS and BMVC, with contributions in **multi-dimensional attention mechanisms**, **contrastive learning frameworks**, and **physiological computing**. Experienced in developing efficient and deployable AI solutions with a deep understanding of systems engineering, validation and regulatory compliance for real-world impact. Passionate about advancing interdisciplinary research to address fundamental scientific problems, leveraging strong foundations in **machine learning**, **signal processing** and **health sciences**.

Education

Ph.D. Candidate | University College London, UK (2020–2025)
Research Area: Robust cross-dataset generalization using multi-dimensional attention mechanism for camera-based sensing of bio-signals.
- Advisors: Prof. Youngjun Cho ( ), Prof. Nadia Berthouze ( )
- Supported by a fully funded departmental studentship for overseas PhD candidates.

M.Sc., Cognitive Systems & Interactive Media | Pompeu Fabra University, Spain (2010–2011)
Research Area: EEG-based Investigation of Brain Wave Entrainment by Binaural Beats & Music.
- Advisors: Dr. Sylvain Le Groux ( ), Prof. Paul Verschure ( )

B.Tech., Electronics & Communication | Nirma University, India (2004–2008)
- Major: Signal Processing, Digital System Design, Modern Processor Architecture

Work Experience [Employment History]

2024 – · · · ·
Research Associate | University College London, United Kingdom
Part-time role alongside doctoral studies
- *Research areas*: Photorealistic image synthesis using generative AI tools including diffusion models and neural-style transfer, multi-modal semantic segmentation.

2020 – 2024
Post Graduate Teaching Assistant | University College London, United Kingdom
Part-time role alongside doctoral studies
- Supported under-grad and post-grad teaching modules on research methods, affective computing, and systems engineering.

2016 – 2024
Solution Architect | Tata Elxsi, Pune-India ('16–'20) and London-UK ('20–'24)
- Spearheaded the design and architecture of AI-driven medical imaging solutions, while simultaneously managing a high-impact client projects valued at over $1 million in revenue, and leading system validation.
- Contributed to patents on edge-AI based solution for on-device dense object-detection, and optical system design to ensure consistent and high-quality image acquisition.

Work Experience [Employment History] (continued)

2014 – 2016 **Sr. Scientist - R&D | Azoi Inc, Ahmedabad, India**
• Developed algorithms for handheld vital signs monitoring devices and supported clinical validation and EU regulatory compliance.

2011 – 2014 **Senior R&D Engineer | National Brain Research Centre, Manesar, India**
• *Research areas*: fMRI-based investigation of functional alterations in visuospatial perception as a potential biomarker for Alzheimer's disease; Development of frameworks for synchronized acquisition of fMRI data and the presentation of audiovisual stimuli.

Selected Publications

Conference Proceedings

1. **J. Joshi**, S. Agaian, and Y. Cho, "FactorizePhys: Matrix factorization for multidimensional attention in remote physiological sensing," in *The Thirty-eighth Annual Conference on Neural Information Processing Systems*, 2024. URL: https://openreview.net/forum?id=qrfp4eeZ47.
2. **J. Joshi**, N. Bianchi-Berthouze, and Y. Cho, "Self-adversarial multi-scale contrastive learning for semantic segmentation of thermal facial images," in *33rd British Machine Vision Conference 2022, BMVC 2022, London, UK, November 21-24, 2022*, BMVA Press, 2022. URL: https://bmvc2022.mpi-inf.mpg.de/0864.pdf.

Journal Articles

1. **J. Joshi** and Y. Cho, "iBVP Dataset: RGB-Thermal rPPG dataset with high resolution signal quality labels," *Electronics*, vol. 13, no. 7, p. 1334, 2024, ISSN: 2079-9292. URL: https://www.mdpi.com/2079-9292/13/7/1334.
2. **J. Joshi**, K. Wang, and Y. Cho, "PhysioKit: An open-source, low-cost physiological computing toolkit for single-and multi-user studies," *Sensors*, vol. 23, no. 19, p. 8244, 2023. URL: https://www.mdpi.com/1424-8220/23/19/8244.
3. **J. Joshi**, S. Saharan, and P. K. Mandal, "BOLDSync: A MATLAB-based toolbox for synchronized stimulus presentation in functional mri," *Journal of neuroscience methods*, vol. 223, pp. 123–132, 2014. URL: https://doi.org/10.1016/j.jneumeth.2013.12.002.
4. P. K. Mandal, **J. Joshi**, and S. Saharan, "Visuospatial perception: An emerging biomarker for alzheimer's disease," *Journal of Alzheimer's Disease*, vol. 31, no. s3, S117–S135, 2012. URL: https://doi.org/10.3233/JAD-2012-120901.

Patents

1. T. Tran, H. Watson, and **J. Joshi**, "Imaging device with illumination components," 2021. URL: https://patents.google.com/patent/WO2021229347A1.
2. T. Tran, H. Watson, **J. Joshi**, and R. Patel, "Compensation of intensity variances in images used for colony enumeration," 2021. URL: https://patents.google.com/patent/WO2021229337A1.
3. T. Tran, H. Watson, **J. Joshi**, A. SK, and R. Tiwari, "Detecting a condition for a culture device using a machine learning model," 2021. URL: https://patents.google.com/patent/WO2021234514A1.

Awards and Achievements

2020 **Project Excellence Awards, Tata Elxsi**
• Design and development of an AI-based Edge imaging device for automated counting of bacterial colonies, targeted for the global food and beverage industry.
Role: System Architect and Project Manager
• Design of an innovative automated peritoneal dialysis system.
Role: R&D Lead

2019 **Hackathon Winner, Tata Elxsi**
AI-based medical image enhancement

2018 Prestigious **Tata Innovista** Award
Point-of-care diagnostic device for malaria and sickle cell disease URL

Technical Skills

Research Areas	Computer-vision, deep-learning, segmentation, objects and landmarks detection, generative adversarial networks, contrastive learning, domain specific data-augmentation, physiological computing, signal-processing, neuro-imaging, cognitive science, human-computer interaction.
Professional Competencies	Project management, systems engineering, medical device development, optical system design, system validation and verification.
Programming Languages	Python, C/C++, MATLAB, Arduino, LaTeX
Frameworks	PyTorch, TensorFlow

Certifications

2019 **Executive Data Science Specialization**. Awarded by Coursera.

2018 **Deep Learning Specialization**. Awarded by Coursera.

References

Available upon request