Jitesh Joshi

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Professional Summary

Research Scientist with a decade of experience in **AI, computer vision, and deep learning**, specializing in **wearable computing** and **healthcare**. Proven track record of publishing in top-tier conferences (**NeurIPS, BMVC**) and developing innovative solutions for real-world applications. Expertise in **attention mechanisms**, **out-of-distribution generalization**, and **physiological computing**, with a strong focus on **efficient and deployable AI systems**. Passionate about leveraging cutting-edge research to solve impactful problems in healthcare and beyond.

Education

- **Ph.D. Candidate | University College London, UK (2020–2025)**
  Thesis Title: Enhancing Out-of-distribution Generalization for Robust Camera-based Remote Physiological Sensing.
  - Advisors: Prof. Youngjun Cho (⦿), Prof. Nadia Berthouze (⦿)
  - Fully supported the 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**
  - Conduct research on photorealistic image synthesis using generative AI tools (**diffusion models, neural-style transfer**) and multi-modal semantic segmentation.

2020 – 2024 **Post Graduate Teaching Assistant | University College London, United Kingdom**
  - Delivered tutorial lectures, workshops and mentored students in **research methods, physiological computing, and systems engineering**.
  - Mentored undergraduate and postgraduate projects in **machine learning, human-computer interaction, and physiological computing**.

2016 – 2024 **Solution Architect | Tata Elxsi, Pune-India ('16–'20) and London-UK ('20–'24)**
  - Led the design and implementation of **AI-driven medical imaging solutions**, resulting in successful deployment and validation of complex systems.
  - Managed high-impact client projects exceeding **$1 million in revenue**, ensuring on-time delivery and product compliance.
  - **Mentored a team of 10+ AI engineers**, providing technical guidance on deep learning, computer vision, and edge-AI solutions, fostering a culture of innovation and collaboration.
  - Contributed to **patents** for resource-constrained edge-AI solutions, including on-device dense object detection and optical system design.

Work Experience [Employment History] (continued)

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

2011 – 2014 🔖 **Senior R&D Engineer | National Brain Research Centre, Manesar, India**
- Conducted **fMRI-based research** on functional alterations in visuospatial perception as a potential biomarker for Alzheimer's disease.
- Developed frameworks for synchronized acquisition of fMRI data and audiovisual stimuli presentation.

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**
- Led the design of an AI-based edge imaging device for automated bacterial colony counting.

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

2018   Prestigious **Tata Innovista** Award
- Contributed to the development of point-of-care diagnostic device for malaria and sickle cell disease 🔗 URL.

Technical Skills

Research Areas	Computer-vision, deep learning, generative models, contrastive learning, multi-modal sensing, physiological computing, signal processing, on-device AI algorithms, neuro-imaging, cognitive science, human-computer interaction.
Programming Languages & Frameworks	Python, C/C++, MATLAB, PyTorch, TensorFlow.
Professional Competencies	Project management, system engineering, medical device development, regulatory compliance.

Certifications

2024   **Generative AI with Large Language Models**. In Progress with Coursera

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

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

References

Available upon request