Jitesh Joshi

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Professional Summary

Experienced researcher with a strong background in computer vision, deep learning with multi-dimensional and multi-modal datasets, signal processing and physiological computing. Expertise in medical imaging, AI-driven health technologies, and systems engineering. Proven track record in publishing in leading conferences and journals and leading interdisciplinary projects, as a solution architect and project manager.

Education

Ph.D. Candidate, Computer Science
University College London, United Kingdom (2020–2024)
- Thesis: *Remote Physiological Sensing using RGB and Thermal Infrared Imaging.*
- Advisors: Prof. Youngjun Cho (🔗), Prof. Nadia Berthouze (🔗)
- Awarded a fully funded departmental studentship for overseas PhD candidates.

M.Sc., Cognitive Systems & Interactive Media
Pompeu Fabra University, Spain (2010–2011)
- Thesis: *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]

2016 – · · · ·
Technical Specialist | Solution Architect
Tata Elxsi: Pune, India (2016–2020) | London, United Kingdom (2020–· · · ·)
- *Roles:* System architect and lead engineer in artificial intelligence, imaging and optics.
- Developed medical imaging solutions, predictive algorithms for cardiovascular diseases and cognitive disorders, and ICU management solutions.
- Managed projects with more than $1 million in revenue.

2020 – 2024
Postgraduate Teaching Assistant
University College London, United Kingdom
- *Modules:* Research Methods and Making Skills (🔗 COMP0145), Affective Computing and Human-Robot Interaction (🔗 COMP0053), Affective Interaction (🔗 PSYC0021), Systems Engineering (🔗 COMP0016)
- *Research areas*: Physiological computing, semantic segmentation for multi-modal RGBT datasets, face and landmarks detection in thermal images of humans and primates, and photorealistic image synthesis using neural style transfer and diffusion models.

2014 – 2016
Lead R&D Engineer
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
NeuroImaging & NeuroSpectroscopy Lab, National Brain Research Centre, Manesar, India
- fMRI-based investigation of functional alterations in visuospatial perception as a potential biomarker for Alzheimer's disease.
- Development of neuroimaging tools and frameworks for acquisition synchronized presentation of audiovisual stimuli.

Publications

Conference Proceedings

1. **J. Joshi**, Y. Cho, and S. Agaian, "FactorizePhys: Effective spatial-temporal attention in remote photo-plethysmography through factorization of voxel embeddings," in *NeurIPS*, 2024.
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