

# 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.

### 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]

2020 – . . . .

### Postgraduate Teaching Assistant | Research Fellow

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.

2016 – 2024

### Technical Specialist | Solution Architect

Tata Elxsi: Pune, India (2016–2020) | London, United Kingdom (2020–2024)

- *Roles*: System architect and lead engineer in artificial intelligence, imaging, and optics.
- Developed medical imaging automation, predictive algorithms for cardiovascular diseases and cognitive disorders, and ICU management solutions.
- Managed projects with more than \$1 million in revenue.

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 visuospatial perception for Alzheimer's disease diagnostics.

## 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](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](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](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](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](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](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](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](https://patents.google.com/patent/WO2021234514A1).

## Awards and Achievements

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| 2020 | <div><div>■</div><div><b>Project Excellence Awards, Tata Elxsi</b><ul style="list-style-type: none"><li>• Design and development of an AI-based Edge imaging device for automated counting of bacterial colonies, targeted for the global food and beverage industry.<br/><i>Role: System Architect and Project Manager</i></li><li>• Design of an innovative automated peritoneal dialysis system.<br/><i>Role: R&amp;D Lead</i></li></ul></div></div> |
| 2019 | <div><div>■</div><div><b>Hackathon Winner, Tata Elxsi</b><br/>AI-based medical image enhancement</div></div>  |
| 2018 | <div><div>■</div><div><b>Prestigious Tata Innovista Award</b><br/>Point-of-care diagnostic device for malaria and sickle cell disease <a href="#">URL</a></div></div>   |

## Technical Skills

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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, $\text{\LaTeX}$
Frameworks	PyTorch, TensorFlow

## Certifications

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- 2019  **Executive Data Science Specialization.** Awarded by Coursera.
- 2018  **Deep Learning Specialization.** Awarded by Coursera.

## References

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Available upon request