Jitesh Joshi

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Work Experience [Employment History]

2020 – · · · ·
- **Postgraduate Research Teaching Assistant.** Computer Science Department, University College London, London, United Kingdom.
  Modules: Research Methods and Making Skills (COMP0145), Affective Computing and Human-Robot Interaction (COMP0053), Affective Interaction (PSYC0021), Systems Engineering (COMP0016)
- **Solution Architect.** Healthcare and Life-sciences Business Unit, Tata Elxsi, London, United Kingdom
  Consulting areas: Medical imaging, predictive algorithms for arrhythmia and cardiac arrest, automation in ICU, development of physiological markers for cognitive disorders.

2016 – 2020
- **Specialist.** Healthcare and Life-sciences Business Unit, Tata Elxsi Limited, Pune, India
  Roles: System architect, lead engineer - optics, AI and imaging, project management.

2014 – 2016
- **Lead R&D Engineer.** Azoi Inc, Ahmedabad, India.
  Contributions: Robust signal-processing algorithms for handheld vital signs monitoring device, clinical validation, regulatory compliance support for EU market launch.

2011 – 2014
- **Senior R&D Engineer.** Neuro-imaging & Neuro-spectroscopy Lab, National Brain Research Centre, Gurugram, India.
  Research Area: Functional MRI (fMRI) based investigation of visuospatial perception as diagnostic biomarker in patients with Alzheimer's disease.

2009 – 2010
- **Programmer Analyst** Telecommunication Department, Cognizant Technology Solutions, Bengaluru, India.

Education

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

2010 – 2011
- **M.Sc., Cognitive Systems & Interactive Media**, Pompeu Fabra University, Spain.
  Thesis title: *Brain Wave Entrainment by Binaural Beats & Music for Recovery of Coma.*
  Advisors: Dr. Sylvain Le Groux (), Prof. Paul Verschure ()

2004 – 2008
- **B.Tech., Electronics & Communication**, Nirma University, India.
  Internship: *GSM Network Switching Subsystem at Nokia Siemens Networks.*

Publications

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.

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 *In Review*, 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.

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.

Other Unpublished Articles/ Pre-prints

1. **J. Joshi** *et al.*, "System and method for calculating blood pressure using pulse transit time with single calibration," patent filed in Indian Patent Office, 2014.

2. **J. Joshi** *et al.*, "ThermalPrimate: Facial landmark detection and physiological monitoring in thermal infrared videos of Macaques in the wild," Unpublished, 2024.

3. G. Ren, **J. Joshi**, and Y. Cho, "Multi-modal hybrid learning and sequential training for RGB-T saliency detection," arXiv preprint arXiv:2309.07297, 2023.

Awards and Achievements

2020 **Project Excellence Award.** Project: Edge computing based dense object detection for enumerating bacterial colonies. Role: Project Lead, Tata Elxsi, Pune, India.

Project Excellence Award. Project: Design of innovative automated peritoneal dialysis system. Role: R&D Lead, Tata Elxsi, Pune, India.

2019 **Hackathon Winner.** Topic: AI-based medical image enhancement; Organizer: Tata Elxsi, Pune, India.

2018 **Tata Innovista.**, Piloted Technologies - Point-of-care Testing Device for Malaria and Sickle Cell Disease. URL

2008 **Guinness World Record.** Longest musical concert by a group (in 2008), 7 members, 62 hrs. Played an instrument (Tanpur), Hindustani Classical Music. Organized by Pancham Academy, Ahmedabad.

Awards and Achievements (continued)

2007 **Nirma-Labs Young Techno-Entrepreneur** (special appreciation prize) awarded for *LADAR Model for Terrain Mapping and Ranging using LASER Scanning*, team of 3.

Certification

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

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

2008 **Certification in Yoga and Ayurveda**. Awarded by DSVV, Uttarakhand, India.

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
Languages	Reading, writing and speaking competencies for English, Hindi, Gujarati.

References

Available on Request