Jitesh Joshi

RESEARCHER: COMPUTER VISION, DEEP LEARNING, PHYSIOLOGICAL COMPUTING

Profile

Proficient in leading research projects involving machine learning, computer vision, physiological computing, and systems design primarily for healthcare and medical domain.

Employment History

Solution Architect, Tata Elxsi, Pune, India & London, UK

OCTOBER 2016 — PRESENT

- Pioneered AI practice for healthcare and medical devices.
- Lead a team of engineers and senior engineers for a business critical project on edge-AI enabled imaging device for microbial counting, leading to successful and timely market launch.
- Won multiple project excellence awards, and lead an organisation to win the prestigious Tata Innovista award in 2018.
- Contributed to IP creation in the areas of image processing, optics and system design.

Lead R&D Engineer, Azoi Inc, Ahmedabad, India

AUGUST 2014 — SEPTEMBER 2016

- Developed signal processing algorithm for hand-held vital signs monitoring device. This involved real-time processing of ECG and photo-plethysmography (PPG) along with anomaly detection and noise handling.
- Lead the research on cuff-less estimation of blood-pressure, using ECG and PPG signals.
- Managed a team of researchers, engineers as well as a team responsible for clinical validation.
- Contributed to the submission of technical file for regulatory approval in EU, which lead to the successful market launch of the device.

Senior R&D Engineer, National Brain Research Centre, Gurugram, India

DECEMBER 2011 — AUGUST 2014

Research area: Non-invasive neuroimaging.

- Conducted functional MRI (fMRI) based study to investigate the role of visuospatial perception as diagnostic biomarker in patients with Alzheimer's disease.
- Developed a MATLAB based toolbox to facilitate the presentation of audio-visual stimulus in synchronisation with fMRI scanner.

Education

Doctor of Philosophy, University College London, London

JANUARY 2020 — PRESENT

UCL Interaction Centre, Department of Computer Science.

Research area: Computer vision, physiological computing, deep-learning

Research topic: Contactless extraction of physiological signals using RGB and thermal infrared imaging.

Master of Science, Universitat Pompeu Fabra, Barcelona

JANUARY 2010 — JANUARY 2011

Cognitive Systems & Interactive Media

Bachelor of Technology, Nirma University, Ahmedabad

JANUARY 2004 — JANUARY 2008

Electronics and Communication Engineering

Details

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Links

Profile @ UCL
GitHub - Physiological Computing Lab
Tata Elxsi
LinkedIn
Personal Website

Skills

- Research & Development
- Computer Vision, Deep Learning
- Physiological Computing
- PyTorch, TensorFlow
- Systems Engineering

Publications & Patents

Published

- Joshi, J.; Wang, K.; Cho, Y. PhysioKit: An Open-Source, Low-Cost Physiological Computing Toolkit for Single and Multi-User Studies. Sensors 2023, 23, 8244. https://doi.org/10.3390/s23198244
- Joshi, J, Berthouze, N, and Cho, Y; Self-adversarial Multi-scale Contrastive Learning for Semantic Segmentation of Thermal Facial Images, British Machine Vision Conference 2022, London, UK
- Joshi J, Saharan S, Mandal P, BOLDSync: A MATLAB-based toolbox for synchronized stimulus presentation in functional MRI, Journal of Neuroscience Methods, 2014, DOI-10.1016/j.jneumeth.2013.12.002.
- Mandal P, Joshi J, Saharan S, Visuospatial Perception: An Emerging Biomarker for Alzheimer's Disease, Journal of Alzheimer's Disease, 2012. DOI-10.3233/JAD-2012-120901

In Review

- Joshi, J.N., & Cho, Y. (2024). iBVP Dataset: RGB-Thermal rPPG Dataset With High Resolution Signal Quality Labels. Preprints. https://doi.org/10.20944/preprints202402.0504.v1
- Ren G, Joshi J, & Cho Y (2023). Multi-Modal Hybrid Learning and Sequential Training for RGB-T Saliency Detection. arXiv preprint arXiv:2309.07297.
- Wang K, Joshi J, & Cho Y (2023). Sympathy for the Gamer: Understanding Empathic Concern on Physiological States and Prosocial Attitudes of Spectators during Livestream Gameplay

Patents

- Detecting a condition for a culture device using a machine learning model, 2021.
- Imaging device with illumination components, 2021.
- Compensation of intensity variances in images used for colony enumeration, 2021.

Courses

Teaching as Post Graduate Teaching Assistant

Affective Computing and Human-Robot Interaction, University College London

JANUARY 2021 — APRIL 2024

Research Methods and Making Skills, University College London

SEPTEMBER 2020 — DECEMBER 2023

Key Specializations Studied

Executive Data Science Specialization, Coursera

JUNE 2019 — SEPTEMBER 2019

Deep Learning Specialization, Coursera

APRIL 2018 — JUNE 2018