CURRICULUM VITAE

Professor Ardhendu Behera BEng (Hons), MEng, PhD, FHEA, MIEEE, MBCS, MAAAI

1. PERSONAL DETAILS

Phone: 01695 657270
Email: beheraa@edgehill.ac.uk
Web-page: https://www.edgehill.ac.uk/person/ardhendu-behera/staff/
https://computing.edgehill.ac.uk/~abehera/
ORCiD: https://orcid.org/0000-0003-0276-9000
Google Scholar (h-index 22): https://scholar.google.co.uk/citations?user=S7ZjPcsAAAAJ&hl=en
ResearchGate (RI Score 607.4): https://www.researchgate.net/profile/Ardhendu_Behera

2. TERTIARY/HIGHER EDUCATION

2016 Postgraduate Certificate in Teaching in Higher Education, Edge Hill University

2006 PhD, Computer Science, University of Fribourg, Switzerland

2001 Master of Engineering (First Class), System Science and Automation, Indian Institute of Science, Bangalore

1999 Bachelor of Engineering (Hons), Electrical Engineering, Motilal Nehru National Institute of Technology, Allahabad, India

3. APPOINTMENTS AND EXPERIENCE

08/2022 – Present Professor of Computer Vision & AI, Programme Leader (Robotics & AI, Computer Engineering and System Automation)

08/2020 – 07/2022 Reader (Associate Professor) in Computer Vision & AI, Programme Leader (Science Pathway)

09/2014 – 07/2020 Senior Lecturer in Computing, Programme Leader (Science Pathway) and Visualisation Research Theme Leader, Edge Hill University

03/2017 – 03/2019 Visiting Senior Academic (University of Leeds)

01/2017 – 01/2018 Edge Hill University Impact Fellow (REF20221, Panel B)

03/2014 – 03/2016 Visiting Research Fellow, University of Leeds

10/2013 – 02/2014 Senior Research Fellow, University of Leeds

03/2013 – 09/2013 Visiting Research Fellow, University of Leeds

02/2007 – 02/2013 Research Fellow, University of Leeds

06/2002 – 12/2007 PhD scholar and Research Assistant, University of Fribourg, Switzerland

03/2001 – 06/2002 Member of Technical Staff, Sun Microsystems

4. CONTRIBUTIONS TO TEACHING AND STUDENT SUPPORT

(a) Organisational responsibilities – Programmes Leader

BSc (Hons) Computer Science (2018 – present)
BSc (Hons) Computer Science and Mathematics (2018 – present)
BSc (Hons) Data Science (2018 – present)
BSc (Hons) Software Engineering (2018 – present)
BSc (Hons) Robotics and Artificial Intelligence (2018 – present)
BSc (Hons) Systems Automation (2019 – present)
BSc (Hons) Computer Engineering (2019 – present)

MCOMP Software Application Development (2018 – 2019)
BSc (Hons) Computer Science and Artificial Intelligence (2021 – present)

(b) Organisational responsibilities – Modules development and delivery

Computer Graphics and Modelling, CIS2160/CIS2134, 2014 – 2018 (Module Leader)
Programming Languages: Theory to Practice, CIS2117/CIS2147, 2015 – present (Module Leader)
Data Visualisations, CIS4118, 2017 – present (Module leader)
Interface Programming, CIS3118/CIS3149, 2015 – present (Module Leader)
Interface Programming, CIS4137/CIS4202, 2017 – present (Module leader)
Programming Languages: Inspiring Creativity, CIS2118/CIS2157, 2017 – present (Module leader)
Intelligent Systems, CIS3156, 2017 – present (Module leader)
Digital World 1: Computer Architecture and Networks, CIS1102, 2015 (Tutor)
Digital World 2: Information Systems and Design, CIS1103, 2015 (Tutor)

Programming: Concepts to Construction, CIS1002, 2014 (Tutor)
Programming Languages: Theory to Practice, CIS2117, 2014 (Tutor)
Team Project, CIS2116, 2014 (Tutor)
Computing/Web Development Project, CIS3122, 2014 – 2015 (supervisor)
Research & Development Project, CIS3300, 2016 – present (supervisor)
Research & Development Project, CIS4108, 2016 – present (supervisor)
Personal tutoring and pastoral support, 2014 – present (Level 4 and level 5)
Streaming Media, CIS 3112, 2017 (tutor)
Employability, CIS 2162, 2017 (tutor)

Postgraduate module: Problem Solving with Computers, COMP5255M, 2010 – 2012 (Joint-module leader, University of Leeds)
Postgraduate module: Problem Computer Vision, COMP5430M, 2010 – 2012 (substitute lecturer, University of Leeds)

(c) Contributions to teaching materials – new programmes/modules development and teaching support
Programming languages, writing source codes, software development and project management, technical support for running software/programs in teaching labs, technical support for students working with NAO robots.

Involved in developing the below modules for new programmes:
CIS4118 – Data Visualisation
CIS2171 – Foundations in Robotics and Artificial Intelligence
CIS2172 – Applied Industrial Automation
CIS3137 – Advanced Robotics and Artificial Intelligence
CIS2174 – Virtual Realisation of Systems
CIS3305 – Computer Vision

Engaged in supporting and developing modules for the following new degree programmes
MSc Games Programming and Visual Computing
BSc (Hons) Artificial Intelligence and Robotics
BSc (Hons) Systems Automation
BSc (Hons) Computer Science and Artificial Intelligence
BSc (Hons) Computer Engineering
BEng (Hons) Electronic Engineering (September 2021 entry onwards)
MEng Electronic Engineering (September 2021 entry onwards)

(d) Contributions to teaching innovation and student (internal and external) support
Supporting students to improve their employability through summer internship programme supported by Academic Registry through Student Opportunity Fund (SOF).

- A bursary of £7,328.47 is received to support six second year computing students in year 2017.
- A bursary of £ 1,454.88 to support two second year computing students in year 2018.
- A bursary of £ 4,536.00 to support four second year computing students in year 2019.
- A bursary of £ 7.219.80 to support six undergraduate students in year 2021.
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Engaged with Nuffield foundation (http://www.nuffieldfoundation.org/) to host Nuffield Research Placement students who are in their first year of a post-16 science, technology, engineering and maths (STEM) course.

- One student in year 2017
- Three students in year 2018
- Two students in year 2019

As a personal tutor, I often provide support/guidance/advice on how to be successful in job application/interview.

5. CONTRIBUTIONS TO ADMINISTRATION AND MANAGEMENT
Programme leaders for science pathways: Computer Science, Computer Science and Mathematics, Data Science, Software Engineering, Robotics and Artificial Intelligence, Systems Automation, MCOMP Software Application Development, and Computer Science and Artificial Intelligence (2018 – present)
Research Centre Steering Committee Member (2020 – present)
Department of Computer Science Equality and Diversity Committee (DEDC) member (2019 – present)
Department of Computer Science Research Committee (2018 – 2019)
Department Athena SWAN Committee Member (2015 – 2019)
Impact Fellow to support Research Impact Manager and Research Office (2017 – 2018)
Department Recruitment Panel Member – GTA, RITA-GTA and RA (2015 – present)
Department Safeguarding Representative (2015 – present)

Internal examiner for PhD registration (1st year), progression (2nd year) and final (3rd year) viva (2015 – present).
Internal examiner for MRes registration and final viva (2015 – present)
Chairing PhD viva - registration and progression (2016 – present)
Developed various interactive demonstrations (human-robot interactions, human-computer interactions) for outreach activities, open and applicant days (2015 – present)
Developed and conducted “Robotic and AI Tester Sessions” for college and high school students (2017 – present)
Taking part in open/applicant days activities (2015 – present)
Knowledge exchange and recruitment committee member (2016 – present)
Faculty Health, Safety & Environment Committee Member (2016, temporary cover for 6 months)
Department Technician Support (2016, temporary cover for 4 months)
Acted as Lab manager of the Computer Vision group (University of Leeds)
Held health and safety manager for the Computer Vision group (University of Leeds, 2010 – 2013)
Organised computer vision group's weekly journal club (University of Leeds, 2010 – 2013)
Managed vision group's website (University of Leeds, 2010 – 2013)

6. RESEARCH INTERESTS

Research Area
Computer Vision and Pattern Recognition
Human-Robot Social Interactions
Image and Video Analytics
Action, Activity and Behaviour Understanding
Dynamic Scene Understanding
Assistive Technologies

Research Centre/Lab
Leading visualisation theme (currently 4 academics) of the Research Centre for Data and Complex Systems

Member of the Visual Computing Lab (currently 6 academics)

Established Interdisciplinary Research Group – Cognitive Computer Vision and Machine Intelligence (CCVMI), which is now merged with the department’s recent research centre (Data and Complex Systems) and Visual Computing Lab.

Supervised Research Staff
Four Post-doctoral Research Associate (PDRA) (2019 – 2023).

Three PhD students have completed their PhD (2019, 2020, 2021)

Four Research Assistants (2018, 2021 and 2022)

7. RESEARCH FUNDING

Successful Applications

PI, UKRI EPSRC (2023 – 2026, PI, £870K): ATRACT - A Trustworthy Robotic Autonomous system to support Casualty Triage. Partners: Loughborough University, University of Brighton, University of Brighton, and University of Portsmouth.

PI, External funding reward (2023 – 2026): A reward of £20K for securing the external funding from the UKRI EPSRC for the ATRACT project.

Academic Supervisor, Innovate UK (2023 – 2026, Academic PI, £205K): Augmented Reality (AR) to support the design and delivery of AR immersive learning spaces. A Knowledge Transfer Partnership (KTP) with Gener8.

PI, Cancer Research UK (CRUK, 2022 – 2023, £76K): LungHealth AI: Using AI to improve early detection and diagnosis of lung cancer. Partners: University of Liverpool (Molecular & Clinical Cancer Medicine)

Co-I, EU Horizon, MSCA Staff Exchange, Co-I (2022 – 2023, €129K), SynAM: Integration of Advanced Experiments, Imaging and Computation for Synergistic Structure-Performance Design of Powders and Materials in Additive Manufacturing.

PI, CRUK-PCUK-EPSRC Grant (2021- 2022, £100K) - PANC-CYS-GAN: A Multimodal Longitudinal Generative Adversarial Network (GAN) to Discriminate High-risk Cysts for the Early Detection of Pancreatic Cancer. Partners: University College London (UCL), Queen Mary University of London (QMUL), University of Hertfordshire and Manchester Metropolitan University.

Co-I, PhenomUK (BBSRC, EPSRC and MRC, 2021 – 2022, £25K) - DeepEarNet: Accurate Segmentation and Measurement of Cereal Grain Spikes Directly in Point Clouds Using Latest Deep Learning and Domain Knowledge. Partners: Aberystwyth University

Co-I, External funding reward (2021 – 2022): A reward of £1.2K for securing the external funding from PhenomUK for the DeepEarNet project.

Co-I, Royal DSM Academic Research Collaboration (2021 – 2022, £17K) - AI approaches for process performance and product quality.

Co-I, Royal Society International Exchanges (2020 – 2022, £12K): High resolution aerosol monitoring from Fengyun-3D MERSI-II satellite image classification to enhance air quality assessment.

PI, Exploring AI for the advancement of the early detection and diagnosis of cancer. Edge Hill University Student Opportunity Funding (2021 – 2022). Total £7.2K

PI (UK Academic Lead), UKIERI – DST Grant (2019 – 2021) – CHARM: Context-aware Human Activity Recognition and Monitoring in intelligent vehicles. Co-I: Nik Bessis (EHU), Yonghuai Liu (EHU) and Dima Damen (University of Bristol). Indian Lead: R. Venkatesh Babu (IISc Bangalore, India). Total £196K

Co-I, Engage Liverpool (2018 - 2019) – How can architecture and technology be used to design living environments to improve quality of life for people with palliative care needs? (£2.5K). PI: Amara Nwosu, Academic Palliative & End of Life Care Centre, University of Liverpool.

Student Opportunity Fund (SOF), Academic Registry, Edge Hill University (2019) – Behaviour-based multi-robot collaboration for robust exploration (~£4.5K)

PI, External funding reward (2019 – 2021): A reward of £7.5K for securing the external funding from UKIERI-DST for the CHRAM project.

PI, RIF conference travel (2018 – 2019): Travel bursary of £1K for attending IEEE AVSS conference in Auckland, New Zealand

Student Opportunity Fund (SOF), Academic Registry, Edge Hill University (2018) – Recognition of facial expression and non-verbal body language for human-robot social interactions (~£1.5K)

Student Opportunity Fund (SOF), Academic Registry, Edge Hill University (2017) – Human Activity and Behaviour Understanding: Dimensions of Human-Robot Social Interaction (~£7.5K)

PI, RITA, Edge Hill University (2016) – Adaptive User Interface: Design and Development of an Eye-based Human-Computer Interaction (HCI) for People with varying Severity of Disabilities (£25K), Co-I: Dr Motonori Yamaguchi (EHU Psychology), External Partners: Prof Gregory Francis (Purdue University), Dr Bakul Soni, (SCI Unit, Southport and Ormskirk Hospital NHS Trust), Prof Carolyn Young (The Walton Centre) and Mr Dave Watling (The Walton Centre)

PI, RITA PhD Studentship, Edge Hill University (2016) – A computer vision-based innovative rehabilitation system for stroke, Spinal Cord Injury (SCI) and Motor Neurone Disease (MND) patients for improving their care (~£42K). Co-I: Dr Motonori Yamaguchi (EHU Psychology) and Prof Mary O'Brien (Faculty of Health and Social Care)

Co-I, RIF, Edge Hill University (2016) – GENEActiv and Actigraph accelerometers in older adults (£7K), PI: Prof Stuart Fairclough (EHU, Sports and Physical Exercises)

PI, RIF, Edge Hill University (2015) – Autonomous Intelligent Feature for Reducing Driver's Interaction by Understanding their Behaviour Pattern (£15K)

Successful Research Donations and Equipment Grants:

PI, NVIDIA Corporation GPU Grant (2022): Early detection and diagnosis of pancreatic cancer, NVIDIA RTX A6000 Graphics Card (48 GB, ~£6K)

PI, NVIDIA Corporation GPU Grant (2019): Learning to recognize social activities in a home environment for socially assistive AI or companions, NVIDIA Titan V Graphics Card (12 GB, ~£6K)

Co-I, NVIDIA Corporation GPU Grant (2019): Deep Reinforcement learning for hand-eye coordination, NVIDIA Titan V Graphics Card (12 GB, ~£6K)

PI, NVIDIA Corporation GPU Grant (2018): Vision-based deep learning framework for monitoring progression of functional recovery, NVIDIA Quadro P6000 Graphics Card (24 GB, ~£5K)

PI, Home Instead Senior Care (2018): BREATHE - Behaviour monitoring via REspiratory Activity Transpiring at Home/Hospital settings for the Elderly, Novelda's XeThru Respiratory Sensor (X4M200, £280)

Co-I, NVIDIA Corporation GPU Grant (2017): Applying the GPGPU to a vision analytics algorithm, NVIDIA Quadro M5000 Graphics Card (8GB, ~£2K)

Under Review

Co-I, EPSRC (2023 – 2025, £1.17M) TeleRob4Mfg: Intelligent Immersive Telerobotics for Digital Manufacturing. Partners: Lancaster University, National Nuclear Laboratory, Socients AI.

Unsuccessful Applications

Co-I, EPSRC (£237K, 2021 – 2023): IT2WFH: Immersive Telerobotics Interface for Industrial Work from Home.

Co-I, EPSRC (£250K, 2021 – 2023): MtF – Outline Proposal, Telework: Intelligent telerobotics interface for industrial work from home.

Co-I, Royal Society International Collaboration Awards 2020 (2021 – 2023, £225K): iRice: Intelligent Platform for Rice Crop monitoring and management.

Co-PI, New Frontiers in Research Fund, Government of Canada, 2020 Transformation Competition (2021 – 2027, £1.7M): DementiaAssist: Transforming Dementia Care in Communities Through Intelligent Sensing and Socially Assistive Therapeutic Robots.

PI, Industrial Collaboration Inospin, Accurate and Precise Detection of Substances using Hyperspectral Imaging Technology (2021 – 2022, $100K)

PI, ARC NWC PhD Studentship (unfunded): NowAndThen: AI-driven Personalised Digital Diary Making System for Reminiscence Therapy for Addressing and Reducing Health Inequalities

PI, UK-Canada AI Initiative (2020 – 2023, ESRC/Canadian Tri-Nation, Total ~£800K, EHU £495K): REALMEDIC: Responsible and Explainable AI for Learning to Manage Emotions of persons with Dementia via Interactive Communication. Co-Is: Prof Yonghuai Liu (EHU – Computer Science), Prof Geoffrey Beattie (EHU – Psychology), Prof Annalena Venneri (Sheffield – Neuroscience), Prof Emma Bartfay (UOIT – Health Science, Canada), Prof Wally Bartfay (UOIT – Health Science, Canada) and Dr Khalid Elgazzar (UOIT – Applied Sciences and Engineering, Canada)

Co-I, UKIERI-DST (2020 – 2021, Total £23K, EHU ~£15K): Role of Robotics & AI in Smart Factories of the future, in collaboration with Academy of Maritime Education and Training (AMET) University, India

PI, Global Challenges Research Fund (GCRF), Edge Hill University (2019) – Maximising underutilized farmland by empowering connections between land-owner and small-scale farmers for economic and sustainable agro-farming (£25K). In collaboration with National University of Malaysia (NUM) and Multimedia University Malaysia.

Co-I, RITA, Edge Hill University (2019) - The Language of 360° Cinematography for Virtual Reality Documentaries (£25K).

PI, EPSRC Bright Ideas, (Engineering for a Prosperous Nation 2018) – BREATHE - Behaviour monitoring via REspiratory Activity Transpiring at Home/Hospital settings for the Elderly (£200K), partners: Home Instead Senior Care (West Lancashire & Chorley).

PI, ESRC (£48K, 2017 – 2019): A Deep Framework for Nonlinear Dimensionality Reduction for Interactive Data Visualisation. Partners: University of Leeds

PI, RITA Edge Hill University (2017) – The Visual Diary – A Memoir of Recovery and Rehabilitation (£26K, unsuccessful). Co-I: Dr Huaizhong Zhang (EHU – Computing), Prof Mary O'Brien (EHU – FoHSC) and Dr Bakul Soni, (SCI Unit, Southport and Ormskirk Hospital NHS Trust)

PI, RITA Edge Hill University (2017) – i-LEARN: interactive Learner Drivers Engagement Aid by Recognising their Non-verbal gestures (£25K, unsuccessful), Co-I: Dr Hui Fang (EHU – Computing), Dr Motonori Yamaguchi (EHU Psychology) and Prof Natasha Merat (ITS, University of Leeds).

PI, EPSRC, First Grant (2016) – CHARM: Context-aware Human Activity Recognition and Monitoring (£125K), Collaborators: Dr Motonori Yamaguchi (EHU Psychology), Prof Natasha Merat (ITS, University of Leeds) and AGL School of motoring.

PI, Epilepsy research UK (2016) – CARE-ME: Computer vision based Automatic REcognition and Monitoring of Epilepsy (£150K), Co-I: Prof Carolyn Young (The Walton Centre), Prof Anthony Marson (The University of Liverpool), Dr Radhika Manohar (The Walton Centre) and Dr Samantha Jafferson (The Walton Centre).

PI, J O Naucler Memorial Foundation for PhD studentship (2016) – Developing a sustainable and low-cost vision-based automation system for local farmers (~£70K), Collaborators: Aquaponics Lab

Co-I, EU, H2020 (2016) – AWESOME: Assistive WEarable Sensors for Optimal Motion Enhancement (£15K), PI: AI Tech srl, Italy.

Co-I. Wellcome Seed Grant (2016) – Cognitive Principles for Hands-free, Gaze-controlled Typing System for Normal and Disabled Populations (£100K), PI: Dr Motonori Yamaguchi (EHU Psychology).

8. POSTGRADUATE STUDENT AND PDRA SUPERVISION

PhD Theses

Supervising (2021 – 2024): Plant disease Detection and Classification from images (Supervisor)

Supervising (2021 – 2024): Automated virtual driving scene generation for testing of advance driver assistance systems (Director of Studies)

Supervised to completion (2016-2019): Integrating Global Weather Data with Local Weather Stations to Provide Customized Weather Forecasting and Monitoring for Agriculture (Director of Studies).

Supervised to completion (2017-2020): A vision-based approach for monitoring progression of functional recovery involving activity of daily living (Director of Studies).

Supervised to completion (2018 – 2021): Big data visualisation in immersive virtual reality (Supervisor).

MRes/MSc Theses

Supervised to completion (2021 – 2022): Simulating the Behaviour of Self-learning Autonomous Vehicle in a Virtual Environment

Supervised to completion (2019 – 2020): Attention-based Multi-Stream Network for Recognition of Driver's Behaviour

Supervised to completion (2011 – 2012): Real-time Activity/Gesture Recognition from Wearable Cameras, University of Leeds.

Supervised to completion (2011 – 2012): Unsupervised relational learning in a chosen video data set, University of Leeds.

Postdoctoral Research Associate (PDRA)

Dr Arindam Sarkar (2023 – present)
Dr Asish Bera (2019 – 2021), currently Assistant Professor at Birla Institute of Technology and Science (BITS) Pilani, India
Dr Bappaditya Debnath (2021 – 2022), currently Research Associate at the Kings College London (KCL).
Dr Pradeep Hewage (2019 – 2021), currently lecture at the University of Bolton.

9. EXTERNAL ACADEMIC ACTIVITIES

Membership of Professional Bodies

Member of IEEE (MIEEE), 2019 – present
Member of Association for the Advancement of Artificial Intelligence (AAAI), 2020 – present
Fellow of Higher Education Academy (FHEA), 2017 – present
Member of British Computer Society (MBCS), 2015 – present
British Machine Vision Association (BMVA), 2008 – present

Applied Vision Association (AVA), 2016 – present
Affiliated member of International Association of Pattern Recognition (IAPR), 2008 – present
Affiliated member of the European Coordinating Committee for Artificial Intelligence (ECAI), 2008 – present

Membership of Research Networks

Neurodegenerative Interest Group, Liverpool Health Partners (https://liverpoolhealthpartners.org.uk/research-programmes/neuroscience-and-mental-health/), 2022 – present
HealthTech Diagnostic Focus Group, Science and Technology Facilities Council – UKRI, 2021 – present
North-West Space Cluster Consortium, Science and Technology Facilities Council – UKRI, 2021 – present
Visual Image Interpretation in Humans and Machines (ViiHM, www.viihm.org.uk), EPSRC Network for Biological and Computer Vision, 2015 – present
Vision and Language, (V&L Net, www.vl-net.org.uk), EPSRC Network, 2016 – present
Integrating Vision and Language (iV&L Net, www.ivl-net.eu), European Network, 2016 – present
European Research Network for Cognitive Computer Vision System (ECVision, www.ecvision.org), European Network, 2016 – present

Conference/Symposium/workshop chair

Organizer: Hazard Perception in Intelligent Vehicles (HPIV 2022) in in conjunction with IEEE Winter Conference on Applications of Computer Vision (WACV) (https://ardhendubehera.github.io/HPIV/)

Organizer: British Machine Vision Association (BMVA) Symposium on Human Activity Recognition and Monitoring (http://www.bmva.org/meetings), British Computer Society (BCS) London, 8th November 2017 (https://goo.gl/nXXy3f).

Chair: International Workshop on Cognitive Assistive Systems: Closing the Action-Perception Loop (CAS 2012, http://www.cs.bris.ac.uk/~damen/cas2012/). In Conjunction with IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2012), Algarve, Portugal 2012

External PhD Examiner

Ms. Umm-e-Laila, OSS Adoption Model for Critical Sectors IT Infrastructure, NED University of Engineering and Technology, Pakistan 2021

Ms. Gopika, EEG Time-series: Classification & Analysis, International Institute of Information Technology (IIIT) Bangalore, India, 2020.

Javier A. Albusac Jimenez, A Model for Normality Analysis of Events and Behaviours in Monitored Environments: Application to Video Surveillance, University of Castilla-La Mancha, Spain, 2009.

Keynote Speeches/ Invited Talks/Presentations

1. CHARM: Context-aware Human Activity Recognition and Monitoring for Intelligent Vehicles, **Edge Talks - Festival of Ideas 2021**, June 2021, https://www.edgehill.ac.uk/festival-of-ideas/edge-talks-festival-launch-event/
2. Data-driven Automation and Personalization. Keynote speaker at **15th International Conference on Digital Information Management (ICDIM)**, November 2020.
3. Computer Vision and Deep Learning – A Marriage of Neuroscience and Machine Learning. Keynote speaker at the **Seventh National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG)**, December 2019.
4. Internet of Things (IoT) and Artificial Intelligence (AI) - A Marriage Made in Data. Keynote speaker at the **International Conference on Internet of Things (ICIoT 2019),** Chennai, India, March 2019.
5. Computer Vision and Deep Learning – A Marriage of Neuroscience and Machine Learning. Invited speaker at the **Department of Data Science, Department of Electrical Engineering, Indian Institute of Science (IISc), Bangalore, India**, December 2019.
6. The Role of Human-Robot Social Interactions in Healthcare, Social Care and Home Care of the Future. Invited speaker at the **Home Care Research Forum at King's College London**, November 2018
7. Computer Vision in Automation and Robotics – An Opportunity or a Threat. Keynote speaker at **International Conference on Emerging Trends in Engineering, Science and Technology (ICRISET 2018)**, Gujarat, India, December 2018
8. Social robotics in healthcare and overview of the CAVE at Edge Hill University. Invited speaker in **Palliative Care, Architecture and Designs Symposium, University of Liverpool,** November 2018
9. Human-Robot Social Interactions: The Future of Health and Social Care. Invited speaker in **Alzheimer's Research UK (ARUK) – Public meeting**, University of Leeds, June 2018

10. Human Sensing – Enabling machines/robots to understand and characterize human activity and behavior. Invited speaker at **The National University of Malaysia** (Faulty of Science and Technology), August 2018
11. Human Activity Recognition and Monitoring. Invited speaker at **Trakomatic Kuala Lumpur, Malaysia**, August 2018
12. Invited speaker **University of Bradford, School of Computing**, Informatics and Media Research Seminar, Real-time Ego-centric Activity Monitoring and Recovery using Wearable Sensors (October 2013).
13. Invited speaker **University of Dundee, Vision Group Seminar**, Real-time Activity Monitoring and Recovery using Wearable Sensors (March 2013).
14. University of Leeds, School of Computing Research Colloquia, Egocentric Activity Recognition and Recovery (September 2012).
15. Invited speaker University of Fribourg, Department of Informatics Research Seminar, Workflow Modelling using Qualitative Spatial Pairwise Relations (April 2011).

Reviewer for Research Councils (RCUK):
RCUK – Biotechnology and Biological Sciences Research Council (BBSRC), Medical Research Council (MRC), Engineering and Physical Science Research Council (EPSRC), and UKRI Future Leaders Fellowships.

RCUK/Royal Society/CRUK invited meetings:
UKRI EPSRC Trustworthiness of autonomous robotic systems for national security and defence (24th – 26th May 2022), total available fund £3M

Royal Society of Chemistry: Measuring cancer earlier: Wearable Technologies and Real-time Health Monitoring. Burlington House, London (6th May 2022)

UKRI EPSRC Healthcare Technologies Strategy Refresh: Prevention Workshop (Virtual, 25 – 26 April 2022)

UKRI EPSRC Healthcare Strategy Refresh: Prediction and Early Diagnosis Workshops (Virtual, 3 – 4 March 2022)

UKRI EPSRC Digital Healthcare Sandpit (Virtual, 18 – 29 October 2021), total available fund £1.5M

Cancer Research UK: Early Detection & Diagnosis Technologies for Primary Care Triage Sandpit Innovation Workshop. DoubleTree by Hilton Oxford Belfry, Milton Common, Thame (7-10 November 2021), available fund £230K per project.

Cancer Research UK: Early Detection & Diagnosis of Pancreatic Cancer (Virtual, 29th November to 2nd December 2020), available fund £100k per project.

EPSRC and Jaguar Land Rover: Trustworthy Autonomous Systems (TAS) Town Hall Meeting at the Grand Connaught Rooms, London (18th October 2019)

Royal Society's Scientific Meeting: Creating connections – Research, industry and infrastructure in the North-West (Manchester), November 2017.

EPSRC and Jaguar Land Rover Joint Workshop: Towards Autonomy - Smart and Connected Control, The "Radcliffe" Conference Centre, University of Warwick, Coventry, December 2014.

Journal Paper Regular Reviewer for:
Neurocomputing, Pattern Recognition, Computer Vision and Image Understanding (CVIU), IEEE Transactions on Image Processing, IEEE Transactions on Intelligent Transportation Systems, Artificial Intelligence Reviews, IEEE Access, IET – Computer Vision, Sensors, Multidisciplinary Digital Publishing Institute (MDPI), Applied Sciences, Multidisciplinary Digital Publishing Institute (MDPI), Multimedia Tools and Applications, Computers and Education, IEEE Intelligent Transportation Systems Magazine, Journal of Intelligent and Robotics Systems

Journal Paper Invited Reviewer for:
IEEE Signal Processing Letters
IEEE Transactions on Systems, Man, and Cybernetics
Machine Vision and Applications (MVA)

Program Committee Member and Reviewer:
IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2010, 2011, 2018, 2019, 2020, 2021, 2022, 2023)
Neural Information Processing Systems (NeurIPS 2019, 2020, 2021, 2022, 2023)
International Conference on Machine Learning (ICML 2019, 2020, 2021, 2022, 2023)
International Conference on Association for the Advancement of Artificial Intelligence (AAAI 2020, 2021, 2022, 2023)
European Conference on Computer Vision (ECCV 2010, 2020, 2022)
International Conference on Computer Vision (ICCV 2011, 2019, 2021)
IEEE Winter Conference on Application of Computer Vision (WACV 2019, 2020, 2021, 2022, 2023)
Asian Conference on Computer Vision (ACCV 2018, 2020, 2022)

International Conference on Intelligent Robots and Systems (IROS 2019, 2020, 2021, 2022)
International Conference on Robotics and Automation (ICRA, 2019, 2020, 2021, 2022)
British Machine Vision Conference (BMVC 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023)
International Conference on Pattern Recognition (ICPR 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020 and 2022)
Computer Analysis of Images and Patterns (CAIP 2011, 2013, 2015, 2017, 2019 and 2021)
International Conference on Computer Vision Theory and Applications (VISAPP 2015, 2016, 2017, 2018, 2019 and 2020)
International Conference on Signal Image Technology and Internet based Systems - SITIS (2018)
First International Workshop on Brain-Inspired Computer Vision (WBICV 2017)
International Conference on Applications and Systems of Visual Paradigms VISUAL 2018
International Symposium on Big Data and Cloud Computing Challenges (ISBCC 2017)
2nd International Workshop on Cognitive Robotics Systems: Replicating Human Actions and Activities (CRS 2013)
IEEE Advanced Video and Signal-Based Surveillance (AVSS 2013 and 2018)
IAPR Workshop on Document Analysis Systems (DAS 2005 and 2006)
IEEE International Conference on Document Analysis and Recognition (ICDAR 2005 and 2006)
ACM Symposium on Document Engineering (DocEng 2004, 2005 and 2006)

Academic Awards/Distinction:
Endowment Chair in Artificial Intelligence at the Charotar University of Science & Technology, Gujarat, India (2019 – 2020)
Press Release, Journal *Frontiers* (2013)
EU verdicts (Excellent) on COGNITO FP7 project (2013)
Best Computer Science PhD thesis of the year (prize 3,000 CHF) by the Faculty of Science, University of Fribourg (2006).
Top 1% (All India Level) in GATE (Graduate Aptitude Test in Engineering) (1999)
2nd (out of 54) position in B.Eng. in Department of Electrical Engineering (1999)
National Merit Scholarship, Odhisa, India (1995 – 1999)

Media Coverage and Public Engagement:

Media Coverage (March 2023): ATRACT - War-zone triage with AI and UAVs (Army Technology), ATRACT: Battlefield Triage Drone to be Used (Military Historia), ATRACT: Drone with artificial intelligence on the battlefield (Patras Drone Academy), Aerial AI project aims to save lives on the battlefield (The Engineer), AI-powered drones could help save lives on the battlefield (Engineering and Technology).

Media Coverage (May 2021): "Never done before" AI study could improve early detection of pancreatic cancer (CRUK), Pioneering research into the early detection and diagnosis of pancreatic cancer (EHU), Study to investigate how AI could aid early detection of pancreatic cancer (MMU), Study to investigate how AI could aid early detection of pancreatic cancer (Bart Cancer Institute).

Media Coverage (June 2019): University leading research so self-driving intelligent cars can predict driver distraction (EHU), CHARM: a Project to Predict Driver Distraction in Intelligent Cars (Robot Reporter, Artificial Intelligence News)

BBC Radio Lancashire (January 2019): Graham Liver breakfast show, Robbie the robot for dementia monitoring
talkRADIO (January 2019): Eamonn Holmes show, Robbie the robot for dementia monitoring
talkRADIO (January 2019): The Late Late Early Early Show with Paul Ross, Robbie the robot for dementia monitoring
Media Coverage (January 2019): **BBC News, Daily Mirror, The Times, The Sun, Daily Mail, The Metro, ITV**, **Outlook,** and many more. https://www.bbc.co.uk/news/uk-england-lancashire-47122851

Science and Media Museum in Bradford (February 2019): Partnering up with CBBC's Operation Ouch (https://www.bbc.co.uk/cbbc/shows/operation-ouch) to demonstrate human-robots social interactions.
Organised **Festival of Ideas Event** (2018): Human-robot Social Interactions: The future of robotics and automation in social care and support

Invited to take part in **UK Parliament week** for the exhibition of Robotics and AI (12 – 18 November 2018)
BBC Radio Merseyside (October 2017, Human-Robot Social Interactions)
That's Lancashire Television (October 2017, Human-Robot Social Interactions)
University Press Release (October 2017, Human-Robot Social Interactions)
Member of West Lancashire Dementia Action Alliance (DAA)

10. PUBLICATIONS

International (peer-reviewed) Journal/Conference Articles

Selected Published/Accepted Articles:

1. J. Crewe, A. Humnabadkar, Y. Liu, A. Ahmed, and A. Behera (2023): SLAV-Sim: A Framework for Self-Learning Autonomous Vehicle Simulation. Sensors 2023, 23, 8649. https://doi.org/10.3390/s23208649
2. J. Xie, Y. Zhao, Y. Zheng, Y. Liu, S. Yu, H. Fu, A. Macerollo, J. Zhang, **A. Behera**, A. F. Frangi, Y. Wu, C. Fan, H. Qi, and J. Liu (2023) Deep Segmentation of OCTA for Evaluation and Association of Changes of Retinal Microvasculature with Alzheimer's Disease and Mild Cognitive Impairment, *British Journal of Ophthalmology*.
3. A. Bera, Z Wharton, Y. Liu, N. Bessis and **A. Behera** (2022): SR-GNN: Spatial Relation-aware Graph Neural Network for Fine-Grained Image Categorization. *IEEE Transaction on Image Processing*, 31, 6017-6031.
4. J. Hao, Y. Liu, **A. Behera**, J. Zhang and Y. Zhao (2022): Retinal Structure Detection in OCTA Image via Voting-based Multi-task Learning, *IEEE Transaction on Medical Imaging*, 41 (12), 3969-3980.
5. P. Bakaki, B. Rechard, E. Pereira, A. Tagalakis, A. Behera, A. Ness and Y. Liu (2022): Key Landmarks Detection of Cleft Lip-Repaired Partially Occluded Facial Images for Aesthetics Outcome Assessment, 21st International Conference on Image Analysis and Processing (ICIAP 2022)
6. B. Debnath, M. O'Brien, S. Kumar and **A. Behera** (2022): A Step Towards Automated Functional Assessment of Activities of Daily Living**.** The 6th International Workshop on Health Intelligence in conjunction with 36th AAAI Conference on Artificial Intelligence (AAAI 2022)
7. S. Kumar, H. Sampson, **A. Behera** (2022): Benchmarking Deep Reinforcement Learning Algorithms for Vision-based Robotics. ArXiv preprint arXiv:2201.04224
8. B. Debnath, M. O'Brien, M. Yamaguchi and **A. Behera** (2022): A review of computer vision-based approaches for physical rehabilitation and assessment. Multimedia Systems 28(1), 209–239.
9. A. Bera, Z. Wharton, Y. Liu, N. Bessis and **A. Behera** (2021): Attend and Guide (AG-Net): A Keypoints-driven Attention-based Deep Network for Image Recognition. IEEE Transaction on Image Processing, vol. 30, pp. 3691-3704, 2021, doi: 10.1109/TIP.2021.3064256. (Impact Factor: 10.86)
10. Devika, K. B., A. Bera, V. R. S. Yellapantula, **A. Behera**, Y. Liu, and S. C. Subramanian (2021). Driver Distraction Recognition-driven Collision Avoidance Algorithm for Active Vehicle Safety. In 2021 IEEE International Intelligent Transportation Systems Conference (ITSC), pp. 237-243. IEEE, 2021.
11. Z. Wharton, **A. Behera** and A. Bera (2021). An Attention-driven Hierarchical Multi-scale Representation for Visual Recognition. In 32nd British Machine Vision Conference (BMVC) 2021.
12. B. Debnath, M. O'Brien, S. Kumar and **A. Behera** (2021). Attentional Learn-able Pooling for Human Activity Recognition. In Proceedings of IEEE International Conference on Robotics and Automation (ICRA), pp. 13049-13055. IEEE, 2021.
13. **A. Behera**, Z. Wharton, P. Hewage, A. Bera (2021), Context-aware Attentional Pooling (CAP) for Fine-grained Visual Classification. In Proceedings of 35th AAAI Conference on Artificial Intelligence, vol. 35, no. 2, pp. 929-937. 2021.
14. Z. Wharton, **A. Behera**, Y. Liu, N. Bessis; Coarse Temporal Attention Network (CTA-Net) for Driver's Activity Recognition. In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2021, pp. 1279-1289.
15. P. Hewage, M. Trovati, E. Pereira, and **A. Behera**: Deep Learning Based Effective Fine-grained Weather Forecasting Model. *Pattern Analysis and Application,* 24, no. 1 (2021): 343-366. https://doi.org/10.1007/s10044-020-00898-1
16. **A. Behera**, Z. Wharton, Y. Liu, M. Ghahremani, S. Kumar and N. Bessis, "Regional Attention Network (RAN) for Head Pose and Fine-grained Gesture Recognition," in *IEEE Transactions on Affective Computing*, doi: 10.1109/TAFFC.2020.3031841, 2020.
17. **A. Behera**, Z. Wharton, A. Keidel and B. Debnath, "Deep CNN, Body Pose and Body-Object Interaction Features for Drivers' Activity Monitoring," *in IEEE Transactions on Intelligent Transportation Systems*, doi: 10.1109/TITS.2020.3027240, 2020.
18. M. Ghahremani, B. Tiddeman, Y. Liu, **A. Behera**, Orderly Disorder in Point Cloud Domain, European Conference on Computer Vision (ECCV), Vol 12273, pp 494-509, 2020.
19. M. B. Vankadari, S. Garg, A. Majumdar, S. Kumar, **A. Behera**, Unsupervised Monocular Depth Estimation for Night-time Images using Adversarial Domain Feature Adaptation, European Conference on Computer Vision (ECCV), Vol 12273, pp 443-459, 2020.
20. **A. Behera**, Z. Wharton, P. Hewage, S. Kumar, Rotation Axis Focused Attention Network (RAFA-Net) for Estimating Head Pose, In proceedings of the Asian Conference on Computer Vision (ACCV), 2020.
21. E. Thomas, C. McCrudden, Z. Wharton and **A. Behera,** The Perception of Autonomous Vehicles by the Modern Society: A Survey, *IET Intelligent Transport Systems, 2020,* 14, (10), p. 1228-1239, DOI: 10.1049/iet-its.2019.0703 (*Impact Factor: 2.05)*.
22. B. Debnath, S. Kumar, M. O'Brien and **A. Behera**, Attention-driven Body Pose Encoding for Human Activity Recognition, *International Conference on Pattern Recognition (ICPR), pp. 5897-5904. IEEE, 2021.*
23. P. Hewage, **A. Behera**, M. Trovati, E. Pereira, E. Ghahremani, F. Palmieri and Y. Liu: Temporal Convolutional Neural (TCN) network for an effective weather forecasting using time-series data from the local weather station. *Soft Computing*, 2020, https://doi.org/10.1007/s00500-020-04954-0 (*Impact Factor: 2.784)*.
24. **A. Behera**, P. Matthew, A. Kiedel, H. Fang, P. Vangorp and S. Canning: Associating Facial Expressions and Upper-Body Gestures with Learning Tasks for Enhancing Intelligent Tutoring Systems. *International Journal of Artificial Intelligence in Education*, 2020, https://doi.org/10.1007/s40593-020-00195-2 (Impact Factor: 3.12).

25. P. Ankomah, P. Vangorp, **A. Behera**, Y. Liu, Tagged-ICP: An Iterative Closest Point Algorithm with Metadata Knowledge for Improved Matching of 3D Protein Structures. In Irish Machine Vision and Image Processing conference, 2020.
26. M Ghahremani, Y Liu, P Yuen and **A Behera**. Remote sensing image fusion via compressive sensing. ISPRS Journal of Photogrammetry and Remote Sensing, vol 152, pp.34-48, 2019, https://doi.org/10.1016/j.isprsjprs.2019.04.001 (*Impact Factor: 8.979*)
27. Nwosu, B. Sturgeon, T. McGlinchey, **A. Behera**, S. Mason and T. Payne. Robotic technology for palliative and supportive care: strengths, weaknesses opportunities and threat. *Palliative Medicine*, 2019 https://doi.org/10.1177/0269216319857628 (*Impact Factor: 4.956*)
28. P. Hewage, **A. Behera**, M. Trovati and E. Pereira. Long-Short Term Memory for an Effective Short-Term Weather Forecasting Model Using Surface Weather Data. In proceedings of the 15th International Conference on Artificial Intelligence Applications and Innovations (AIAI) 2019, ISSN: 1868-4238.
29. **A. Behera,** A. Gidney, Z Wharton, D. Robinson and K. Quinn (*Accepted*). A CNN Model for Head Pose Recognition using Wholes and Regions. In 14th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2019) (Oral, *Acceptance rate < 13%*).
30. **A. Behera,** A. Kiedel and B. Debnath. Context-driven Multi-stream LSTM (M-LSTM) for Recognizing Fine-Grained Activity of Drivers. In German Conference on Pattern Recognition (GCPR) 2018, Stuttgart, Germany, pp 298-314, ISBN 978-3-030-12938-5, Online ISBN 978-3-030-12939-2 (Oral, *Acceptance rate < 20%*).
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32. B. Debnath, M. Yamaguchi, M. O'Brien and **A. Behera**. Adapting MobileNets for mobile based upper body pose estimation. In 15th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS) 2018.
33. Z. Wharton, E. Thomas and **A. Behera**. A Vision-based Transfer Learning Approach for Recognizing Behavioral Symptoms in People with Dementia. In 15th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS) 2018.
34. G. Bleser, **A. Behera**, D. Damen, G. Hendeby, A. Gee, M. Miezal, K. Mura, N. Petersen, N. Schmitz,L. Almeida, A. Calway, W. Mayol-Cuevas, A. G. Cohn, D. C. Hogg and D. Stricker, Cognitive Learning, Monitoring and Assistance of Industrial Workflows using Egocentric Sensor Networks. PLoS ONE 10(6), doi:10.1371/journal.pone.0127769, 2015 (*Impact Factor: 4.411*).
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39. **A. Behera**, D. C. Hogg and A. G. Cohn, Egocentric Activity Monitoring and Recovery. The 11th Asian Conference on Computer Vision (ACCV), Daejeon, Korea, pp. 519-532, 2012 (**acceptance rate 26.8%**).
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41. **A. Behera**, A. G. Cohn and D. C. Hogg, Workflow Activity Monitoring using the Dynamics of Pair-wise Qualitative Spatial Relations. International Conference on MultiMedia Modeling (MMM), Klagenfurt, Austria, pp. 196-209, 2012 (**Oral, acceptance rate 15%**).
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43. S. F. Worgan, **A. Behera**, A. G. Cohn and D. C. Hogg, Exploiting petri-net structure for activity classification and user instruction within an industrial setting. International Conference on Multimodal Interaction (ICMI), Alicante, Spain, pp. 113-120, 2011 (**acceptance rate 39%**).
44. J. Howard, I. D. Gilchrist, T. Troscianko, **A. Behera** and D. C. Hogg, Continuous manual responses and continuous gaze tracking during closed circuit television (CCTV) monitoring. European Conference on Eye Movements, Southampton, August 2009.
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46. J. Howard, I. D. Gilchrist, T. Troscianko, **A. Behera** and D. C. Hogg, Monitoring CCTV and watching football: expert-novice differences in the magnitude of a visuo-motor buffer, Vision Science Society Abstracts. Journal of Vision, 9(8), pp.416 - 416, 2009.

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48. **A. Behera**, D. Lalanne and R. Ingold, Combining Color and Layout Features for the Identification of Low-resolution Documents, World Academy of Science, Engineering and Technology, International Journal of Computer, Electrical, Automation, Control and Information Engineering, 2(1), pp. 2525 - 2532, 2008
49. **A. Behera**, D. Lalanne and R. Ingold, Influence of Fusion Strategies on Feature-based Identification of Low-resolution Documents, The ACM Symposium on Document Engineering (DocEng) 2005, 2 -4 November, Bristol, UK, pp. 20-22 (**acceptance rate 39%**).
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(c) Other – Theses

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A. Behera, Enhancements to MPEG-4 Advanced Audio Coding, M.Eng. Thesis, Indian Institute of Science 2001.

A. Behera, Digital Techniques for Protection of Alternators, B.Eng. Thesis, Motilal Neheru National Institute of Technology 1999.