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Author(s)	Corcoran, Peter; Schukat, Michael; Murray, Niall; Farooq, Muhammad Ali; Javidnia, Hosein
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IMVIP 2023

AUG 30 - SEP 1
GALWAY, IRELAND



25th Irish Machine Vision and Image Processing Conference, Galway, 30th August - 1st September

Conference Program and Online Proceedings of the Irish Machine Vision and Image Processing Conference 2023

Welcome Message and Introduction to the 25th Irish Machine Vision and Image Processing Conference (IMVIP 2023)

On behalf of the Organizing Committees, we warmly welcome you to the 25th Irish Machine Vision and Image Processing Conference (IMVIP) held this year in Galway in the West of Ireland. IMVIP was last held in Galway in 2016 and it is our great pleasure to again host the 25th anniversary of this event and celebrate a quarter century of Irish research in this field. We on the organising committee consider ourselves privileged to have this opportunity as co-chairs of this important conference.

Over the last 25 years, IMVIP members have made tremendous contributions in research, teaching and practice, resulting in impacts in many sectors of society. At this conference let us celebrate what we, as a professional community, have achieved. Additionally, our future vision is to create even greater value to all corners of the globe. This conference will be one for us to share our thoughts and exchange ideas on how to chart our journey forward to reach new heights.

We have an exciting program at this conference that will allow members to reflect upon and celebrate our past accomplishments, renew friendships and extend our networks, and jointly explore current and future research directions. We hope that you will have a productive and fun-filled time at this very special conference.

As part of the 25th anniversary of IMVIP, this year we have added an extra day of Special Sessions and Training activities the day before the main conference. In line with recent developments in the field these special sessions will explore new and emerging topics in the field of Machine Vision and Image Processing. Thus we have sessions on *Data Generation and Augmentation*, *Deep Learning in Medical Image Processing*, and *Immersive Technologies for Health & User Experience*. Thanks to all of our special session chairs for the work involved in organising these sessions. We finish this first day with a 4th special session exploring the challenges presented to Machine Vision systems by recent regulatory developments in Data Privacy laws. This will be followed by an expert panel session to further explore emerging Machine Vision Privacy Challenges.

The main conference will open with a Keynote talk from the CTO of Xperi Corporation who will talk about *Driver Monitoring Systems and Next-Generation Perceptual AI*. Xperi is a global leader in driver monitoring technologies and consumer technologies and this talk will provide useful insights into how industry is adopting state-of-the-art machine vision systems in tomorrow's products and services.

Over the next two days we have 8 themed sessions of oral presentations and two additional sessions featuring more than 20 poster presentations. The detailed conference presentation is provided below with links online to each paper presented at the event. We also provide DOI links to

papers published in the conference online community (IMVIP 2023) at zenodo.org. Some papers may include additional datasets or code in the Zenodo archive.

The official proceedings for IMVIP 2023 will be available in a month or so at the [IPRCS website](#).

To put a conference of this magnitude together is not a small task. To that end, we want to thank Professors Sonya Coleman and Richard Gault for providing their wisdom and guidance from their work on IMVIP 2022; Dr. Muhammad Ali Farooq (Program Chair) for his tireless efforts in organising the review process and all sessions and tracks; Dr. Hossein Javidnia (Publicity Chair) for his many contributions including support in setting up the registration process; Dr. Mariam Yiwere (Conference Website and Registrations); Dr. Claudia Costache (Finance Chair, Local Organisation & Logistics). We thank all members of the program committee for their work and contributions during the peer review process. In addition, we would like to offer special thanks to Xperi corporation and ADAPT research centre for their generous financial support and to the Schools of Computer Science and Engineering at University of Galway for supporting our extra day of Training and Special Sessions.

Finally, we would like to thank all of the conference participants for their contributions which are the foundation of this conference. I hope to meet many of you again at IMVIP 2024 at the University of Limerick.

Peter Corcoran

Prof. Peter Corcoran, General Chair IMVIP 2023

IMVIP 2023 - Organizing Committee:

Prof. Peter Corcoran (University of Galway) - General Chair
Prof. Michael Schukat (University of Galway) - Conference Co-Chair
Prof. Niall Murray (Technical University of the Shannon) - Conference Co-Chair
Dr. Muhammad Ali Farooq - Program Chair
Dr. Hosein Javidnia - Publicity Chair
Dr. Claudia Costache - Conference Manager and Financial Chair
Dr. Mariam Yiwere - Conference Website and Social Media

Conference Program Day 1:

IMVIP 2023 Training Day - Opening Remarks

Session Chair: Peter Corcoran

📅 Wednesday, August 30, 2023, at 9:15:00 AM – Wednesday, August 30, 2023, at 9:30:00 AM 📍 Alice Perry Building G017

Multimodal Data: Innovations in Data Generation and Augmentation

Session Chair: Teerath Kumar Menghwar

📅 Wednesday, August 30, 2023, at 9:30:00 AM – Wednesday, August 30, 2023, at 10:50:00 AM 📍 Alice Perry Building G017

- [Adapting the CycleGAN Architecture for Text Style Transfer](#) (20m)
Michela Lorandi (Dublin City University) ;
Maram A. Mohamed (Insight SFI Centre for Data Analytics, Dublin City University.) ; Kevin McGuinness (DCU)
DOI:[10.5281/zenodo.8207989](https://doi.org/10.5281/zenodo.8207989)
- [Assessment of Synthetic Turfgrass Dataset Generation for Divot Detection](#) (20m) Stephen Foy
(ATU Galway, TUD) DOI:[10.5281/zenodo.8298450](https://doi.org/10.5281/zenodo.8298450)
- [A Comparative Study of Image-to-Image Translation Using GANs for Synthetic Child Race Data](#) (20m)
Wang Yao (University of Galway) ; Muhammad Ali Farooq (University of Galway) ;
Joseph Lemley (Xperi Corporation, Galway, Ireland) ; Peter Corcoran (National University of Ireland, Galway)
DOI:[10.5281/zenodo.8208491](https://doi.org/10.5281/zenodo.8208491)
- [AudRandAug: Random Image Augmentations for Audio Classification](#) (20m)
Teerath Kumar (Dublin City University) ; Muhammad Turab (Norwegian University of Science and Technology (NTNU), Gjøvik, Norway) ; Alessandra Mileo (Dublin City University) ; Malika Bendeche (University of Galway)
DOI:[10.5281/zenodo.8217347](https://doi.org/10.5281/zenodo.8217347)

Training Workshop: Large Scale Data Acquisitions on Human Subjects

Session Chair: Joseph Lemley and Paul KIELTY

📅 Wednesday, August 30, 2023, at 9:30:00 AM – Wednesday, August 30, 2023, at 10:40:00 AM
📍 Alice Perry Building G047

Coffee Break #1

📅 Wednesday, August 30, 2023, at 10:50:00 AM – Wednesday, August 30, 2023, at 11:10:00 AM 📍 Foyer, Alice Perry Building

Deep Learning in Medical Image Processing

Session Chair: Malika Bendeche

📅 Wednesday, August 30, 2023, at 11:15:00 AM – Wednesday, August 30, 2023 at 12:15:00 PM
📍 Alice Perry Building G017

- [Compact & Capable: Harnessing Graph Neural Networks and Edge Convolution for Medical Image Classification](#) (20m)
Aryan Singh (University of Limerick); Pepijn van de Ven (University of Limerick) ; Ciarán Eising (University of Limerick) DOI:[10.5281/zenodo.8216799](https://doi.org/10.5281/zenodo.8216799)
- [Assessing Intra-class Diversity and Quality of Synthetically Generated Images in a Biomedical and Nonbiomedical Setting](#) (20m)
Muhammad Muneeb Saad (Munster Technological University, Ireland) ; Ruairí O'Reilly (Cork Institute of Technology) DOI:[10.5281/zenodo.8210006](https://doi.org/10.5281/zenodo.8210006).
- [Facial Camera-Based Heart Rate Estimation Using r-PPG Convolutional Neural Networks](#) (20m)
Mohamed Moustafa (University of Galway); Joseph Lemley (Xperi Corporation, Galway, Ireland) ; Peter Corcoran (National University of Ireland, Galway) DOI: [10.5281/zenodo.8298606](https://doi.org/10.5281/zenodo.8298606)

Training Workshop: Synthetic Data Generation with GANs

Session Chair: Muhammad Ali Farooq

📅 Wednesday, August 30, 2023, at 11:15:00 AM – Wednesday, August 30, 2023, at 12:25:00 PM

📍 Alice Perry Building G047

Lunch #1

📅 Wednesday, August 30, 2023, at 12:30:00 PM – Wednesday, August 30, 2023 at 1:15:00 PM 📍 Foyer, Alice Perry Building

Immersive Technologies for Health, Rehabilitation, and User Experience

Session Chair: Niall Murray (TUS) & Attracta Brennan (UG)

📅 Wednesday, August 30, 2023, at 1:20:00 PM – Wednesday, August 30, 2023, at 3:00:00 PM 📍 Alice Perry Building G017

- [A QoE and Visual Attention Evaluation on the Influence of Spatial Audio in 360° videos](#) (20m)
Amit Hirway (Technological University of the Shannon) ; Yuansong Qiao (Athlone Institute of Technology) ; Niall Murray (Athlone Institute of Technology) DOI:[10.5281/zenodo.8269357](https://doi.org/10.5281/zenodo.8269357).
- [An Expert Evaluation of a VR Intervention for Children with ASD](#) (20m)
Yujing Zhang (Technological University of the Shannon) ;
Conor Keighrey (Technological University of the Shannon: Midlands Midwest) ; Niall Murray (Athlone Institute of Technology) DOI:[10.5281/zenodo.8214682](https://doi.org/10.5281/zenodo.8214682)
- [A Quality of Experience Evaluation of an Interactive Multisensory 2.5D Virtual Reality Art Exhibit](#) (20m)
Chen Chen (Technological University of the Shannon: Midlands); Niall Murray (Athlone Institute of Technology) ;
Conor Keighrey (Technological University of the Shannon: Midlands Midwest) DOI: *not found on Zenodo*
- [Virtual Rehabilitation for Patients with Osteoporosis: Translating Physiotherapy Exercises into Exergames](#) (20m)
Eléa Thuilier (University of Galway) ; John Carey (University of Galway) ; John Dingliana (Trinity College Dublin) ;
Mary Dempsey (University of Galway) ; Shane Biggins (HSE) ; Kenzo Thuilier (Université de Rennes) ; Attracta Brennan (University of Galway) DOI:[10.5281/zenodo.8221531](https://doi.org/10.5281/zenodo.8221531)
- [Designing the VR Probe: An Introductory Application to Virtual Reality for People Living with Dementia \(PLWD\)](#) (20m)
Gearóid Reilly (University of Galway) ; Gabriel-Miro Muntean (Dublin City University); Attracta Brennan (University of Galway) ; Sam Redfern (University of Galway) DOI:[10.5281/zenodo.8208872](https://doi.org/10.5281/zenodo.8208872)

Coffee Break #2 and Mini-Poster Session

📅 Wednesday, August 30, 2023, at 3:00:00 PM – Wednesday, August 30, 2023 at 3:30:00 PM 📍 Foyer, Alice Perry Building

- [Quality of Multimedia Experience Prediction using Peripheral Physiological Signals](#)
Sowmya Vijayakumar (Technological University of the Shannon);
Peter Corcoran (National University of Ireland, Galway) ; Niall Murray (Athlone Institute of Technology)
DOI:[10.5281/zenodo.8273637](https://doi.org/10.5281/zenodo.8273637)
- [Physiological Synchrony: A Novel Approach to Evaluating User Quality of Experience in Collaborative Distributed Virtual Reality Environments](#)
Bhagyabati Moharana (Technological University of Shannon: Midlands Midwest); Niall Murray (Athlone Institute of Technology); Conor Keighrey (Technological University of the Shannon: Midlands Midwest)
DOI:[10.5281/zenodo.8224880](https://doi.org/10.5281/zenodo.8224880)

The Machine Vision Privacy Challenge #1

Session Chair: Peter Corcoran, Gabriel Costache, Joe Lemley

📅 Wednesday, August 30, 2023, at 3:30:00 PM – Wednesday, August 30, 2023, at 4:40:00 PM 📍 Alice Perry Building G017

- [Data Privacy & Machine Vision - Solving the "Cameras are Everywhere" Problem](#) (20m)
Peter Corcoran (University of Galway) DOI:[10.5281/zenodo.8286190](https://doi.org/10.5281/zenodo.8286190)
- [Thermal Vision – Privacy Challenges & Solutions](#) (15m)
Muhammad Ali Farooq (University of Galway); Waseem Shariff (University of Galway); Peter Corcoran (University of Galway) DOI:[10.5281/zenodo.8113272](https://doi.org/10.5281/zenodo.8113272)
- [Event Camera and Neuromorphic Vision for Sensing without Seeing](#) (15m)
Waseem Shariff (University of Galway) ; Paul KIELTY (National University of Ireland Galway) ; Mehdi Sefidgar Dilmaghani (University of Galway) DOI:[10.5281/zenodo.8310913](https://doi.org/10.5281/zenodo.8310913)
- [DAVID - A Privacy-by-Design Edge-AI Smart-Toy Platform](#) (20m)
Gabriel Costache (Xperi); Peter Corcoran (University of Galway) DOI:[10.5281/zenodo.8286231](https://doi.org/10.5281/zenodo.8286231)

The Machine Vision Privacy Challenge #2 - Panel Session

Session Chair: Michael Schukat (UoG)

Panel Members: Peter Corcoran (UoG), Gabriel Costache (Xperi), Michael Madden (UoG), and Kathleen Curran (UCD)

📅 Wednesday, August 30, 2023, at 4:10:00 PM – Wednesday, August 30, 2023 at 4:55:00 PM 📍 Alice Perry Engineering Building

Conference Program Day 2:

IMVIP 2023 Main Conference - Welcome & Opening Remarks

Session Chair: Peter Corcoran and Head of Schools

📅 Thursday, August 31, 2023, at 8:50:00 AM – Thursday, August 31, 2023, at 9:00:00 AM 📍 Alice Perry
Engineering Building

Keynote from Xperi CTO

Session Chair: Peter Corcoran

📅 Thursday, August 31, 2023, at 9:00:00 AM – Thursday, August 31, 2023, at 10:00:00 AM 📍 Alice Perry
Engineering Building

- **Keynote: Driver Monitoring Systems and Next-Generation Perceptual AI** (40m) Petronel Bigioi (Xperi Corporation)

Explainable AI and DeepFakes #1

Session Chair: Peter Corcoran

📅 Thursday, August 31, 2023, at 10:00:00 AM – Thursday, August 31, 2023 at 11:00:00 AM 📍 Alice Perry
Engineering Building

- [Evaluation of Explainable AI Localisation Performance Using Relevance F-Score](#) (20m)
Gregory Balogh (Queen's University Belfast) ; Niall McLaughlin (Queen's University Belfast); Austen Rainer (Queen's University Belfast) DOI:[10.5281/zenodo.8215956](https://doi.org/10.5281/zenodo.8215956)
- [Sampling Matters in Explanations: Towards Trustworthy Attribution Analysis Building Block in Visual Models through Maximizing Explanation Certainty](#) (20m)
Jiaolin Luo (University of Galway) ; James McDermott (University of Galway); Colm O'Riordan (University of Galway) DOI:[10.5281/zenodo.8204452](https://doi.org/10.5281/zenodo.8204452)
- [Learning from Exemplary Explanations](#) (20m)
Misgina Tsighe Hagos (University College Dublin); Kathleen Curran (UCD) ; Brian MacNamee (University College Dublin) DOI: *on Zenodo, but error in DOI*

Coffee Break #3

📅 Thursday, August 31, 2023, at 11:00:00 AM – Thursday, August 31, 2023 at 11:20:00 AM 📍 Foyer, Alice Perry
Engineering Building

Explainable AI and DeepFakes #2

Session Chair: Peter Corcoran

📅 Thursday, August 31, 2023, at 11:20:00 AM – Thursday, August 31, 2023 at 12:00:00 PM 📍 Alice Perry
Engineering Building

- [DF-Net: The Digital Forensics Network for Image Forgery Detection](#) (20m)
David Fischinger (AIT); Martin Boyer (AIT Austrian Institute of Technology GmbH) DOI:[10.5281/zenodo.8142657](https://doi.org/10.5281/zenodo.8142657)
- [DF2023: The Digital Forensics 2023 Dataset for Image Forgery Detection](#) (20m)
David Fischinger (AIT); Martin Boyer (AIT Austrian Institute of Technology GmbH) DOI:[10.5281/zenodo.7274402](https://doi.org/10.5281/zenodo.7274402)

Humans, Facial, Gesture, and Action Analysis

Thursday, August 31, 2023, at 12:00:00 PM – Thursday, August 31, 2023 at 12:40:00 PM Alice Perry
Engineering Building

- [Development of a Classification-based Eye Gaze estimation technique using an Integrated Laptop](#)

[Camera: two models are better than one](#) (20m)

Jack Cribbin (Maynooth University); Charles Markham (National University of Ireland, Maynooth)

DOI: [10.5281/zenodo.8217851](https://doi.org/10.5281/zenodo.8217851)

- [A lightweight 3D dense facial landmark estimation model from position map data](#) (20m)

Shubhajit Basak (National University of Ireland Galway); Sathish Mangapuram (Xperi); Gabriel Costache (Xperi);

Rachel Mc Donnell (Trinity College Dublin); Michael Schukat (National University of Ireland Galway)

DOI: [10.5281/zenodo.8211121](https://doi.org/10.5281/zenodo.8211121)

Poster Session #1 + Lunch

Session Chair: Ihsan Ullah

Thursday, August 31, 2023, at 12:40:00 PM – Thursday, August 31, 2023 at 1:50:00 PM Foyer, Alice Perry
Engineering Building

- [Will your Doorbell Camera still recognize you as you grow old?](#)

Wang Yao (University of Galway); Muhammad Ali Farooq (University of Galway);

Joseph Lemley (Xperi Corporation, Galway, Ireland); Peter Corcoran (National University of Ireland, Galway)

DOI: [10.5281/zenodo.8208367](https://doi.org/10.5281/zenodo.8208367)

- [Defect Classification in Additive Manufacturing Using CNN-Based Vision Processing](#)

Xiao Liu (DCU); Alessandra Mileo (Dublin City University); Alan Smeaton (Insight Centre for Data

Analytics, Dublin City University) DOI: [10.5281/zenodo.8230599](https://doi.org/10.5281/zenodo.8230599)

- [The Impact of Glare on End of Production Line Camera Calibration Algorithms: A Brief Analysis](#)

Payal BHATTACHERJEE (Valeo); Anbuhezhiyan Selvaraju (Valeo); Sudarshan Paul (Valeo); Arindam Das

(Valeo)*; Ishan Vermani (Valeo) DOI: *not found on Zenodo*

- [Automatic Archery Scoring System Using Deep learning and Image Processing](#)

Haozhe Ma (University of Galway); DOI: [10.5281/zenodo.8220336](https://doi.org/10.5281/zenodo.8220336)

- [Deep Learning enabled Computer Vision in Remanufacturing and Refurbishment Applications: Defect Detection and Grading for Smart Phones](#)

Reenu Mohandas (University of Limerick); Colin Fitzpatrick (University of Limerick) DOI: [10.5281/zenodo.8212188](https://doi.org/10.5281/zenodo.8212188)

- [Improving GMM registration with class encoding](#)

Solmaz Panahi (Maynooth university); Jérémy Chopin (Maynooth University); Rozenn Dahyot (Maynooth

University); Matej Ulicny (Maynooth University) DOI: [10.5281/zenodo.8205095](https://doi.org/10.5281/zenodo.8205095)

- [Calculating Breathing Rates from Remote PPG Signals Using Machine Learning Methods](#)

Adara Andonie (Xperi Corporation); Timothy Hanley (Xperi Corporation, Galway, Ireland);

Dara Golden (Xperi Corporation, Galway, Ireland); Robyn Maxwell (Xperi); Ashkan Parsi (Xperi Inc.); Joseph

Lemley (Xperi Corporation, Galway, Ireland) DOI: [10.5281/zenodo.8246594](https://doi.org/10.5281/zenodo.8246594)

- [The Xperi 3D Full Body Photogrammetric Scanner](#)

Arpad Zoldi (Xperi); Stefan G Bigioi (Xperi); Jakub Pawelec (Xperi); Padraic Toomey (Xperi); Victor Vlad (Xperi);

Bogdan L Basuc (XPERI) DOI: *not found on Zenodo*

- [Data Collection with Xperi Driving Simulation Environment](#)

Rachel Corcoran (Trinity College Dublin); Joseph Lemley (Xperi Corporation, Galway, Ireland); Paul

Kielty (National University of Ireland Galway) DOI: [10.5281/zenodo.8212690](https://doi.org/10.5281/zenodo.8212690)

- [Neuromorphic Seatbelt State Detection for In-Cabin Monitoring with Event Cameras](#)

Paul Kielty (National University of Ireland Galway); Cian Ryan (Xperi); Mehdi Sefidgar Dilmaghani (University of

Galway); Waseem Shariff (University of Galway); Joseph Lemley (Xperi Corporation, Galway, Ireland); Peter

Corcoran (National University of Ireland, Galway) DOI: [10.5281/zenodo.8223904](https://doi.org/10.5281/zenodo.8223904)

- [Sign Language Recognition: Can depth cameras be used to correct Mediapipe errors?](#)

FRANK FOWLEY (UCD); Anthony Ventresque (UCD School of Computer Science) DOI: [10.5281/zenodo.8272599](https://doi.org/10.5281/zenodo.8272599)

Vision-based Object Detection & Tracking #1

Session Chair: Hamza Riaz (DCU) and Hossein Javidnia (DCU)

📅 Thursday, August 31, 2023, at 2:00:00 PM – Thursday, August 31, 2023 at 3:20:00 PM 📍 Alice Perry
Engineering Building

- [YUDO: YOLO for Uniform Directed Object Detection](#) (20m)
Djordje Nedeljkovic (Independent Researcher) DOI:[10.5281/zenodo.8209336](https://doi.org/10.5281/zenodo.8209336)
- [Accurate object detection using the sensor fusion of an event-based and a frame-based camera](#) (20m)
Orla Sealy Phelan (University of Galway); Brian Deegan (University of Galway); Dara Molloy (University of Galway); Roshan George (University of Galway); Martin Glavin (University of Galway); Edward Jones (University of Galway) DOI:[10.5281/zenodo.8263485](https://doi.org/10.5281/zenodo.8263485)
- [A Comparative Analysis of Deep Learning Mobile Networks on Marine Vessel Detection](#) (20m) Dipak Gaire Sharma (University College Dublin) ; Michael O'Neill (University College Dublin)
DOI:[10.5281/zenodo.8297123](https://doi.org/10.5281/zenodo.8297123)
- [Towards the Use of Computer Vision Techniques on Streetscape Imagery to Empower Citizens in the Planning Enforcement Process](#) (20m)
Paul Cuffe (University College Dublin); Sam Lynch (University College Dublin) DOI:[10.5281/zenodo.8223949](https://doi.org/10.5281/zenodo.8223949)

Coffee Break #4

📅 Thursday, August 31, 2023, at 3:20:00 PM – Thursday, August 31, 2023, at 3:40:00 PM 📍 Foyer, Alice Perry
Engineering Building

Vision-based Object Detection & Tracking #2

Session Chair: Hamza Riaz (DCU) and Hossein Javidnia (DCU)

📅 Thursday, August 31, 2023, at 3:40:00 PM – Thursday, August 31, 2023, at 4:40:00 PM 📍 Alice Perry
Engineering Building

- [Feature Based Approaches for Homography Estimation](#) (20m)
Samuel Venezia (Ulster University); Sonya Coleman (School of Computing and Intelligent Systems, University of Ulster) ; Dermot Kerr (Ulster University) DOI:[10.5281/zenodo.8202526](https://doi.org/10.5281/zenodo.8202526)
- [Uncompromising Operator Safety: A Standalone Device Approach for Threat Immunity and Malfunction Prevention through Visual Cognition](#) (20m)
Mihai Penica (University of Limerick); Eoin O'Connell (University of Limerick); Reenu Mohandas (University of Limerick); William O'Brien (University of Limerick) ; Sean McGrath (University of Limerick) ; Martin Hayes (University of Limerick)) DOI:[10.5281/zenodo.8236015](https://doi.org/10.5281/zenodo.8236015)
- [YOLOatr : Deep Learning Based Automatic Target Detection and Localization in Thermal Infrared Imagery](#) (20m)
Aon Safdar (NUST) ; Muhammad Usman Akram (National University of Sciences and Technology (NUST)) ; Muhammad Anwar (Malardalens University); Muhammad Abdul Basit Malik (National University of Sciences & Technology) ; Mian Ibad Ali Shah (University of Galway) DOI:[10.5281/zenodo.8264061](https://doi.org/10.5281/zenodo.8264061)

Conference Program Day 3:

Applications in Transportation

Session Chair: Muhammad Ali Farooq

☑ Friday, September 1, 2023, at 9:00:00 AM – Friday, September 1, 2023, at 10:00:00 AM ☑ Alice Perry
Engineering Building

- [Decisive Data using Multi-Modality Optical Sensors for Advanced Vehicular Systems](#) (20m)
Muhammad Ali Farooq (University of Galway); Waseem Shariff (University of Galway); Mehdi Sefidgar Dilmaghani (University of Galway); Wang Yao (University of Galway); Moazam Soomro (University of Central Florida); Peter Corcoran (National University of Ireland, Galway) DOI: [10.5281/zenodo.8160052](https://doi.org/10.5281/zenodo.8160052)
- [Navigating Uncertainty: The Role of Short-Term Trajectory Prediction in Autonomous Vehicle Safety](#) (20m)
Sushil Sharma (University of Limerick); Ganesh Sistu (Valeo Vision Systems); Arindam Das (Valeo); Ciarán Eising (University of Limerick) DOI: [10.5281/zenodo.8205132](https://doi.org/10.5281/zenodo.8205132)
- [Aerially Determined Dynamic Environment Mapping for Enhanced Road Vehicle Awareness](#) (20m)
Brendan Halligan (University of Galway); Dara Molloy (University of Galway); Edward Jones (University of Galway); Brian Deegan (University of Galway); Martin Glavin (University of Galway); Liam Kilmartin (University of Galway) DOI: *not found on Zenodo*

Medical Imaging, Healthcare & Assistive Technologies

Session Chair: Kathleen Curran (UCD)

☑ Friday, September 1, 2023, at 10:00:00 AM – Friday, September 1, 2023 at 10:40:00 AM ☑ Alice Perry
Engineering Building

- [Empowering Visually Impaired Individuals: A Novel Use of Apple Live Photos and Android Motion Photos](#) (20m)
Seyedalireza Khoshsirat (University of Delaware); Chandra Kambhamettu (University of Delaware)
DOI: [10.5281/zenodo.8190085](https://doi.org/10.5281/zenodo.8190085)
- [Saliency Maps as an Explainable AI Method in Medical Imaging: A Case Study on Brain Tumor Classification](#) (20m)
Ayse KELES (Türkiye Ministry of Health, General Directorate of Health Information System); Ozan AKÇAY (Dokuz Eylül University, Institute of Health Science); Halil KUL (Ankara Yıldırım Beyazıt University Department of Neurosurgery Ankara City Hospital); Malika Bendeche (University of Galway) DOI: [10.5281/zenodo.8199332](https://doi.org/10.5281/zenodo.8199332)

Poster Session #2 + Coffee Break #5

Session Chair: Michael Shaukat (UoG)

☑ Friday, September 1, 2023, at 10:40:00 AM – Friday, September 1, 2023, at 11:30:00 AM ☑ Alice Perry
Engineering Building

- [Investigating the Interplay Between Cervical Spine Sagittal Balance and Lower Back Pain Using Computational Biomechanics and Biomedical Imaging](#)
Katherine N Rios Peralta (University College Dublin)*; David MacManus (University College Dublin); Michaela Davis (University College Dublin); Kathleen Curran (UCD) DOI: [10.5281/zenodo.8219372](https://doi.org/10.5281/zenodo.8219372)
- [Towards a performance analysis on pre-trained Visual Question Answering models for autonomous driving](#)
Kaavya Rekanar (University of Limerick); Ciarán Eising (University of Limerick); Martin Hayes (University of Limerick); Ganesh Sistu (Valeo Vision Systems) DOI: [10.5281/zenodo.8211804](https://doi.org/10.5281/zenodo.8211804)
- [Evaluate Fine-tuning Strategies for Fetal Head Ultrasound Image Segmentation with U-Net](#) FANGYIJIE
Wang (University College Dublin); Guenole Silvestre (University College Dublin); Kathleen Curran (UCD)
DOI: [10.5281/zenodo.8205689](https://doi.org/10.5281/zenodo.8205689)
- [Hardware Accelerators in Autonomous Driving](#)

Ken Power (Motional, Inc.); Ciarán Eising (University of Limerick) DOI: *not found on Zenodo*

- [Self-Supervised Online Camera Calibration for Automated Driving and Parking Applications](#)
Ciaran Hogan (Valeo); Ganesh Sistu (Valeo Vision Systems); Ciarán Eising (University of Limerick)
DOI: [10.5281/zenodo.8229126](https://doi.org/10.5281/zenodo.8229126)
- [An Ensemble Deep Learning Approach for COVID-19 Severity Prediction Using Chest CT Scans](#)
Sidra aleem (Dublin City University) ; Mayug Maniparambil (ML Labs) ; Noel Connor (Home) ; Suzanne Little (Dublin City University, Ireland) ; Kevin McGuinness (DCU) DOI: [10.5281/zenodo.8207955](https://doi.org/10.5281/zenodo.8207955)
- [Explaining decisions of a light weight deep network model for Coronary Artery Disease classification in Magnetic Resonance Imaging](#)
Talha Iqbal (Insight Centre for Data Analytics, University of Galway); Ihsan Ullah (School of Computer Science, National University of Ireland Galway) DOI: [10.5281/zenodo.8204736](https://doi.org/10.5281/zenodo.8204736)
- [Non-Contact Breathing Rate Detection Using Optical Flow](#)
Robyn Maxwell (Xperi) ; Adara Andonie (Xperi Corporation) ; Timothy Hanley (Xperi Corporation, Galway, Ireland); Dara Golden (Xperi Corporation, Galway, Ireland) ; Ashkan Parsi (Xperi Inc.) ; Joseph Lemley (Xperi Corporation, Galway, Ireland) DOI: [10.5281/zenodo.8238517](https://doi.org/10.5281/zenodo.8238517)
- [Non-Contact NIR PPG Sensing through Large Sequence Signal Regression](#)
Timothy Hanley (Xperi Corporation, Galway, Ireland) ; Dara Golden (Xperi Corporation, Galway, Ireland) ; Robyn Maxwell (Xperi) ; Ashkan Parsi (Xperi Inc.) ; Joseph Lemley (Xperi Corporation, Galway, Ireland)
DOI: [10.5281/zenodo.8229037](https://doi.org/10.5281/zenodo.8229037)
- [Spurious Correlation Mitigation in CXR Images via Reinforcement learning and Self-Supervision](#)
Weichen Huang (St Andrew's College) ; Kathleen Curran (UCD) DOI: [10.5281/zenodo.8245235](https://doi.org/10.5281/zenodo.8245235)

Transformer Based Methods

Session Chair: Kathleen Curran (UCD)

📅 Friday, September 1, 2023, at 11:30:00 AM – Friday, September 1, 2023 at 12:10:00 PM 📍 Alice Perry
Engineering Building

- [Domain Generalisation with Bidirectional Encoder Representations from Vision Transformers](#) (20m)
Hamza Riaz (Dublin City University); Alan Smeaton (Insight Centre for Data Analytics, Dublin City University)
DOI: [10.5281/zenodo.8246303](https://doi.org/10.5281/zenodo.8246303)
- [Dynamic Cost Volumes with Scalable Transformer Architecture for Optical Flow](#) (20m)
Vemburaj Chockalingam Yadav (German Research Center for Artificial Intelligence); Alain Pagani (DFKI) ; Didier Stricker (DFKI) DOI: [10.5281/zenodo.8253051](https://doi.org/10.5281/zenodo.8253051)

New Datasets and Misc. Applications #1

Session Chair: Hossein Javidnia (DCU)

📅 Friday, September 1, 2023, at 12:10:00 PM – Friday, September 1, 2023, at 12:50:00 PM 📍 Alice Perry
Engineering Building

- [DeepSky dataset: A new benchmark for ground-based cloud classification using all-sky images](#) (20m)
Dimitrios Tsourounis (University of Patras)*; Dimitris Kastaniotis (University of Patras); Panagiotis Tzoumanikas (University of Patras); George Andrianakos (Irida Labs); Orestis Panagopoulos (University of Patras); Andreas Kazantzidis (University of Patras); Christos Theoharatos (Irida Labs); George Economou (University of Patras)
DOI: [10.5281/zenodo.8208504](https://doi.org/10.5281/zenodo.8208504)
- [Haptic Gloves \(SM-EXO\) for Multi-Users in Pick-and-Place Collaborative Robot Simulated Environment](#) (20m)
Rupal Srivastava (Technological University of the Shannon: Midlands, Athlone); Eber Lawrence Souza Gouveia (Technological University of the Shannon: Midlands, Athlone); Niall Murray (Technological University of the Shannon: Midlands, Athlone); Declan Devine (Technological University of the Shannon: Midlands, Athlone)
DOI: [10.5281/zenodo.8318852](https://doi.org/10.5281/zenodo.8318852)

Closing Keynote + Lunch

Session Chair: Peter Corcoran

📅 Friday, September 1, 2023, at 12:50:00 PM – Friday, September 1, 2023, at 1:50:00 PM 📍 Alice Perry
Engineering Building

- [Fake Children: Why we need them and how to make them.](#) (40m)
Peter Corcoran (National University of Ireland, Galway); Muhammad Ali Farooq (University of Galway)

New Datasets and Misc. Applications #2

Session Chair: Hossein Javidnia (DCU)

📅 Friday, September 1, 2023, at 2:00:00 PM – Friday, September 1, 2023 at 3:00:00 PM 📍 Alice Perry
Engineering Building

- [Do the Frankenstein, or how to achieve better out-of-distribution performance with manifold mixing model soups](#) (20m)
Hannes Fassold (Joanneum Research) DOI:[10.5281/zenodo.8208679](https://doi.org/10.5281/zenodo.8208679)
- [Quantifying Temporal Entropy in Neuromorphic Memory Forgetting: Exploring Advanced Forgetting Models for Robust Long-term Information Storage](#) (20m)
Shane P Harrigan (Ulster University)*; Sonya Coleman (School of Computing and Intelligent Systems, University of Ulster); Dermot Kerr (Ulster University); Justin Quinn (Ulster University); Leeanne Lindsay (Ulster University); Kyle Madden (Ulster University); Shammi Rahman (Ulster University); Benn Henderson (Ulster University); Shuo Liu (Ulster University) DOI:*not found on Zenodo*
- [Plant Disease Detection on Multispectral Images using Vision Transformers](#) (20m)
Dane Brown (Rhodes University); Malithi De Silva (Rhodes University) DOI:[10.5281/zenodo.8232619](https://doi.org/10.5281/zenodo.8232619)

Prizes & Awards Ceremony

Session Chair: Michael Schukat & Peter Corcoran

📅 Friday, September 1, 2023, at 3:00:00 PM – Friday, September 1, 2023, at 3:30:00 PM
📍 Alice Perry Engineering Building