

SCHEDULE

of the

9TH ANNUAL CONFERENCE ON COMPUTER
VISION AND INTELLIGENT SYSTEMS

on

DECEMBER 5 AND 6, 2023

DAY 1 — TUESDAY, DECEMBER 5, IN E7-2357 & E7-2317 (ONLINE / IN-PERSON HYBRID).

To join online via Zoom

<https://uwaterloo.zoom.us/j/92290831859?pwd=YnVvbmZWclQybUsrdGtIQ003OTVrZz09>

Meeting ID: 922 9083 1859. Passcode: 449965.

| TIME | EVENT | TITLE / AUTHOR(S) |
|---------------|------------------------------------|---|
| 08:50 – 09:00 | Opening Remarks | Alexander Wong , M.A.Sc., Ph.D., P.Eng., Canada Research Chair in Artificial Intelligence and Medical Imaging, Member of the College of the Royal Society of Canada, Professor at the University of Waterloo, Co-Director of the Vision and Image Processing (VIP) Research Group. |
| 09:00 – 10:00 | Oral Presentations | <i>Context-Aware Augmentation for Contrastive Self-Supervised Representation Learning</i> by Sepanj, Hadi; Fieguth, Paul . |
| | | <i>Unsupervised Methods for Fly Sperm Motility Analysis</i> by Thomson, John W; Park, Jinman; Magdanz, Veronika; Clausi, David A . |
| | | <i>COVIDx CXR-4: An Expanded Multi-Institutional Open-Source Benchmark Dataset for Chest X-ray Image-Based Computer-Aided COVID-19 Diagnostics</i> by Wu, Yifan; Gunraj, Hayden; Tai, Chi-en A; Wong, Alexander . |
| 10:00 – 11:00 | Oral Presentations | <i>VIP-HTD : A Public Benchmark for Multi-Player Tracking in Ice Hockey</i> by Prakash, Harish . |
| | | <i>The Effects of Label Errors in Training Data on Model Performance and Overfitting</i> by Pellegrino, Nicholas; Zhao, Nolen; Fieguth, Paul . |
| | | <i>Out-of-Focus Camera Calibration</i> by Schmalenberg, Ryan; Zelek, John . |
| 11:00 – 12:00 | Oral Presentations | <i>Towards Agile Human Pose Estimation: A Benchmark Study in Ice Hockey Analytics</i> by Balaji, Bavesh; Clausi, David A . |
| | | <i>Vertebral Detection and Labelling Using Deep Learning for Spine MRI Registration</i> by Chu, Jonathan . |
| | | <i>Integrating Inertial Data to a Hybrid Direct-Indirect Visual SLAM System</i> by Hu, Yan Song . |
| 12:00 – 13:10 | Lunch Break | |
| 13:10 – 14:10 | Academic Keynote | <i>Visual Human Motion Analysis</i> by Li Cheng , M. Eng., PhD, Professor at the University of Alberta. |
| 14:10 – 15:10 | Academic Keynote | <i>AI for Precision Medicine - An MRI-based End-to-End Pipeline for Molecular Diagnosis of Pediatric Brain Tumours</i> by Farzad Khalvati , MASC, PhD, Associate Professor at the University of Toronto, Scientist and Endowed Chair in Medical Imaging and Artificial Intelligence at The Hospital for Sick Children and the University of Toronto. |
| 15:10 – 16:30 | 3-Minute-Thesis-Style Rapid Talks! | |

DAY 2 — WEDNESDAY, DECEMBER 6, IN DC-1301 & DC-1302 (ONLINE / IN-PERSON HYBRID).

To join online via Zoom

<https://uwaterloo.zoom.us/j/92290831859?pwd=YnVvbmZWclQybUsrdGtIQ0030TVrZz09>

Meeting ID: 922 9083 1859. Passcode: 449965. (Same as on page 1.)

| TIME | EVENT | TITLE / AUTHOR(S) |
|---------------|---|--|
| 09:30 – 09:45 | Registration & Coffee | |
| 09:45 – 10:00 | Opening Remarks & Welcome | |
| 10:00 – 11:00 | Oral Presentations | <i>A Unified Model Selection Technique for Spectral Clustering Based Motion Segmentation</i> by Huang, Yuxiang; Zelek, John; Chen, Yuhao. <i>Fast, Accurate and Object Boundary-Aware Surface Normal Estimation from Depth Maps</i> by Moradi, Saed; Sepanj, Hadi; Memarmoghadam, Alireza; Laurendeau, Denis; Fieguth, Paul. <i>DARLEI: Deep Accelerated Reinforcement Learning for Embodied Intelligence</i> by Nair, Saejith; Shafiee, Mohammad Javad; Wong, Alexander. |
| 11:00 – 13:00 | Poster Session & Industrial Showcase | |
| 12:00 – 13:00 | Lunch [concurrent with poster session] | |
| 13:00 – 14:00 | Academic Keynote | <i>Decoding the Living Library: AI's Role in Cataloging Biodiversity</i> by Graham Taylor , PhD, Professor at the University of Guelph, Canada CIFAR AI Chair and Research Director at the Vector Institute for Artificial Intelligence, Academic Director at NextAI. |
| 14:00 – 14:30 | Awards Ceremony & Closing Remarks | |

DAY 2 — POSTER SESSIONS, IN DC-1301 (IN-PERSON ONLY), 11:00 – 13:00.

1. *Generating Synthetic Geolocation Data using Conditional Tabular Generative Adversarial Networks: Issues and Challenges* by **Abdullah, Abu Yousuf Md; Hu, Bing; Basri, Mohammad Ahmed; Tsao, Shu-Feng; Butt, Zahid; Chen, Helen.**
2. *Towards Expert-level Feedback for Physiotherapy Exercises with Progress Reports* by **Ashrafzadeh, Hossein; Shabani, Amir.**
3. *Towards Agile Human Pose Estimation: A Benchmark Study in Ice Hockey Analytics* by **Balaji, Bavesh; Clausi, David A.**
4. *A Hyperparameter Framework for Synthetic Data Generation Methods* by **Basri, Mohammad Ahmed; Hu, Bing; Abdullah, Abu Yousuf Md; Tsao, Shu-Feng; Butt, Zahid; Chen, Helen.**
5. *Towards Viewpoint-Invariant Robust 3D Registration: A Contrastive Attention Guided Point Cloud Registration* by **Bright, Jerrin; Zelek, John.**
6. *Vertebral Detection and Labelling Using Deep Learning for Spine MRI Registration* by **Chu, Jonathan.**
7. *Explainable Age Predictions from Electroencephalography Data* by **Cook, Zara; Sinha, Grant; Zhao, Chengzong; Wang, Ze Feng; Doesburg, Sam; Medvedev, George; Ribary, Urs; Vakorin, Vasily; Belacel, Nabil; XI, PENGCHENG.**
8. *μ Arr-Synth – a synthetic dataset generator for DNA-microarray-image-denoising AI models* by **Czarnecki, Krzysztof J; Chen, Yuhao; Wong, Alexander.**
9. *NutritionVerse-3D-2.0: A High-resolution 3D Food Dataset for Nutrition Estimation* by **Czarnecki, Krzysztof J; Vinod, Gautham; Mahmud, Talha Ibn; Tai, Chi-en A; Chen, Yuhao; He, Jiangpeng; Zhu, Fengqing Maggie; Delp, Edward J.; Wong, Alexander.**
10. *Incorporating Attention Mechanism and Word Embeddings for Generating Image Captions* by **D’Mello, Desiree; Bajwa, Garima.**
11. *An Investigation into Tracker Performance on Datasets with Photometric Changes* by **Feng, Chun Cheng.**
12. *Evaluation Methods for Synthetic Data in Pursuit of Open Data* by **Hu, Bing; Basri, Mohammad Ahmed; Abdullah, Abu Yousuf Md; Tsao, Shu-Feng; Butt, Zahid; Chen, Helen.**
13. *Integrating Inertial Data to a Hybrid Direct-Indirect Visual SLAM System* by **Hu, Yan Song.**
14. *A Unified Model Selection Technique for Spectral Clustering Based Motion Segmentation* by **Huang, Yuxiang; Zelek, John; Chen, Yuhao.**
15. *Generalizing For Classes Linked To Domains* by **Kaai, Kimathi; Hossain, Saad; Rambhatla, Sirisha.**
16. *E-OAT: Enhanced Object Annotation using point Tracking* by **Khanna, Dheeraj; Yang, Adam S; Zelek, John.**
17. *Paired Change Detection Through Neural Radiance Field* by **Liu, Yizhe; Zelek, John.**
18. *FoodFusion: A Latent Diffusion Model for Realistic Food Image Generation* by **Markham, Olivia; Chen, Yuhao; Tai, Chi-en A; Wong, Alexander.**
19. *Fast, Accurate and Object Boundary-Aware Surface Normal Estimation from Depth Maps* by **Moradi, Saed; Sepanj, Hadi; Memarmoghadam, Alireza; Laurendeau, Denis; Fieguth, Paul.**
20. *Enhancing Reinforcement Learning in Vision-Based Environments with Optical Flow* by **Mukherjee, Amartya; Liu, Jun.**

21. *DARLEI: Deep Accelerated Reinforcement Learning for Embodied Intelligence* by **Nair, Saejith; Shafiee, Mohammad Javad; Wong, Alexander.**
22. *NutritionVerse-Synth: An Open Access Synthetically Generated 2D Food Scene Dataset for Dietary Intake Estimation* by **Nair, Saejith; Tai, Chi-en A; Chen, Yuhao; Wong, Alexander.**
23. *DEPTH ESTIMATION TO ENHANCE MULTI-OBJECT TRACKING FOR ICE HOCKEY ANALYTICS* by **Nsiempba, Ken M.**
24. *Region-level Ground Truth can produce Pixel-level Segmentation for Sea Ice Concentration* by **Patel, Muhammed; Chen, Xinwei; Xu, Linlin; Chen, Yuhao; Scott, K Andrea; Clausi, David A.**
25. *The Effects of Label Errors in Training Data on Model Performance and Overfitting* by **Pellegrino, Nicholas; Zhao, Nolen; Fieguth, Paul.**
26. *VIP-HTD : A Public Benchmark for Multi-Player Tracking in Ice Hockey* by **Prakash, Harish.**
27. *Out-of-Focus Camera Calibration* by **Schmalenberg, Ryan; Zelek, John.**
28. *Context-Aware Augmentation for Contrastive Self-Supervised Representation Learning* by **Sepanj, Hadi; Fieguth, Paul.**
29. *Towards Precision in Ocular Surface Temperature Measurement: Improvements in the ThermOcular System's Image Segmentation* by **Shahsavari, Navid; Murphy, Paul; Wong, Alexander; Zare Bidaki, Ehsan.**
30. *Instance Segmentation to estimate the volume of food on utensils in single-view videos* by **Sharma, Aaryam; Chen, Yuhao; Czarnecki, Krzysztof J; Wong, Alexander.**
31. *Cancer-Net PCa-Gen: Synthesis of Realistic Prostate Diffusion Weighted Imaging Data via Anatomic-Conditional Controlled Latent Diffusion* by **Sridhar, Aditya; Tai, Chi-en A; Gunraj, Hayden; Chen, Yuhao; Wong, Alexander.**
32. *NutritionVerse-Real: An Open Access Manually Collected 2D Food Scene Dataset for Dietary Intake Estimation* by **Tai, Chi-en A; Nair, Saejith; Markham, Olivia; Keller, Matthew E; Wu, Yifan; Chen, Yuhao; Wong, Alexander.**
33. *Unsupervised Methods for Fly Sperm Motility Analysis* by **Thomson, John W; Park, Jinman; Magdanz, Veronika; Clausi, David A.**
34. *COVIDx CXR-4: An Expanded Multi-Institutional Open-Source Benchmark Dataset for Chest X-ray Image-Based Computer-Aided COVID-19 Diagnostics* by **Wu, Yifan; Gunraj, Hayden; Tai, Chi-en A; Wong, Alexander.**
35. *Beyond the Scoreboard: Advancing Fairness in Athlete Selection with Simulation-Based Tournament Strategies* by **Zeng, E. Zhixuan; Zeng, Yuhong.**
36. *Vision Transformers for Age Prediction from Gait Energy Image Data* by **Zhao, Chengzong; Wang, Ze Feng; Cook, Zara; Sinha, Grant; Li, Simon; Shu, Chang; XI, PENGCHENG.**