Md Amran Hossen Bhuiyan

Toronto, Ontario, Canada • +1 437-260-4380 • amran.apece@gmail.com
https://mdamranhossenbhuiyan.github.io/amran/
https://scholar.google.com/citations?user=GvSAjYAAAAAJ&hl=en

RESEARCH INTERESTS

- **Artificial Intelligence**: Deep learning, domain generalization, transfer learning, & metric learning.
- **Computer Vision**: Person re-identification, multi-camera target tracking, object detection & retrieval.
- **Natural Language Processing**: Large Language Model (LLM) evaluation, information retrieval, & vision-language multimodal systems.
- **Applied AI** : Video surveillance, sport analytics, healthcare AI, and data-driven decision support.

EDUCATION

Ph.D. in Computer Vision, Recognition and Machine Learning, Mar 2014 - April 2017
Istituto Italiano di Tecnologia (IIT) - University of Genova, Italy.
Dissertation: Person Re-identification: From Closed to Open-World Scenario.

Master of Science (Erasmus) in Computer Engineering and Information Sep 2009 - Jun 2011
Technology, Lucian Blaga University of Sibiu, Romania. CGPA: 9.75/10.00,
Dissertation: Image Processing for Skin Cancer Features Extraction. Rank: 01/32

Bachelor of Science in Electrical, Electronics, and Jun 2003 - Jan 2009
Communication Engineering, University of Dhaka, Bangladesh. Result: First Class, Rank: 04/58

ACADEMIC RESEARCH EXPERIENCE

Postdoctoral Research Fellow, York University, Canada. May 2022 - Present
Mentor: **Prof. Jimmy Huang** & **Prof. Aijun An.**

- **Computer Vision-Based AI: Domain Generalization, and Bundle Recommendation.**
  - Residual Diffusion Modeling for Bundle Recommendation(AAAI, 2026).
  - Proposed non-parametric normalization to enhance generalization performance (PR, 2025).
  - Proposed instance-guided multi-granularity learning for domain-robust features (CVIU, 2023).
- **NLP-Based AI: LLMs, Retrieval, and Recommendation**
  - Judging the Judges: Can LVLMs Fairly Evaluate Chart Comprehension and Reasoning? (ACL, 2025)
  - Evaluated large language models, highlighting challenges and limitations (EMNLP, 2024).
  - Analyzed ChatGPT's performance on benchmark datasets (ACL Findings, 2023).
  - Studied BERT-based methods for information retrieval (ACM Computing Surveys, 2024).

Visiting Scholar (Research Intern), University of California, Riverside, USA May 2016 - Oct 2016
Mentor: **Prof. Amit K. Roy-Chowdhury**.

- Formulated a domain-adaptive re-identification method using geodesic flow kernels to match new cameras without retraining (CVPR, 2017).

Doctoral Student Researcher, Istituto Italiano di Tecnologia, Italy. Mar 2014 - Apr 2017
PhD Supervisor: **Prof. Vittorio Murino**, Tutor: **Dr. Alessandro Perina**.

- Developed a generative framework for part-based re-identification that suppresses background noise, models cross-camera appearance variation via brightness transfer functions, and resulted in publications at ECCV 2014, ICIP 2015, and ICIAP 2015.

INDUSTRIAL RESEARCH EXPERIENCE

Deep learning Advisor, Veyetals, MarkiTech.AI, Oakville, Canada. Feb 2024 - Dec 2024

- Led the R&D of a real-time computer vision system for non-invasive vital sign monitoring (heart rate, blood pressure) from facial videos. Designed and optimized CNN-based models for remote photoplethysmography (rPPG), achieving over 95% accuracy in heart rate estimation.
- Built end-to-end pipelines for deploying the solution on web and mobile platforms (Android/iOS). Worked with a cross-functional team (engineering and medical advisors) to integrate the AI solution into a telehealth product.

Industrial Postdoctoral Fellow , Jan 2018 - Mar 2021
École de Technologie Supérieure, & SPORTLOGiQ Inc., Montréal, Canada.
Mentor: **Prof. Eric Granger & Dr. Mehrsan Javan**.

- Developed deep learning models for SPORTLOGiQ Inc. to re-identify players, track movements, recognize activities, model group behavior, and evaluate player/team performance.
- Proposed unsupervised domain adaptation, gated fusion networks for pose-aligned ReID, and RGB-Depth cross-modal ReID (ECCV 2020, WACV 2020, AVSS 2019, CVIU 2022).
- Optimized model efficiency through pruning and attention mechanisms for video re-ID, improving inference speed and scalability (results in EURASIP J. Image Video Proc. 2021 and Image and Vision Computing 2021). Coordinated with engineering teams to deploy these models in production environments.

TEACHING EXPERIENCE

Adjunct Faculty, York University, Toronto, Canada. Jan 2023 -

- Developed curriculum and delivered undergraduate courses **Information and Organizations** and **Internet Client-Server Systems**. Employed technology-enhanced pedagogical techniques (learning management system tools, interactive coding demos, online forums) to engage students in both in-person and hybrid learning environments.
- Foster an inclusive classroom atmosphere, encouraging participation from a diverse student body and integrating real-world examples to support different learning styles.

Instructor, York University, Toronto, Canada. Jun 13 - Jun 20, 2022
SMART-ART Summer Courses 2022 - Introduction to AI

- Taught an intensive introductory course on Artificial Intelligence for a summer enrichment program. Created course materials and hands-on labs to introduce core AI concepts (machine learning, neural networks, computer vision) to undergraduates from mixed disciplinary backgrounds.

Associate Professor and Assistant Professor Mar 2021 - May 2022
Noakhali Science and Technology University, Bangladesh. and Mar 2012- Dec 2017

- Designed and taught undergraduate courses in AI, Computer Vision, Digital Signal Processing, and Systems Design, while actively mentoring student capstone and thesis projects.
- Promoted inclusive education by supporting diverse student cohorts, including first-generation learners, and fostering equitable, research-oriented learning environments.

TECHNICAL SKILL

- Programming Skills: **Python, C, C++, MATLAB, and JavaScript**. .
- Deep Learning Tools: **PyTorch, TensorFlow, JAX, Keras, and ONNX**.
- Data Visualization Tools: t-SNE, Python Libraries (Matplotlib, Seaborn, Plotly) and Tableau.

PUBLICATIONS

Published 25+ peer-reviewed papers in top venues, including *CVPR*, *ECCV*, *AAAI*, *ACL*, *Pattern Recognition*, *CVIU*, and *EMNLP*.

Journal Articles:

1. **Amran Bhuiyan**, Mizanur Rahman, Md Tahmid Rahman Laskar, Aijun An, Jimmy Xiangji Huang. "Evolution of ReID: From Early Methods to LLM Integration." arXiv:2506.13039, 2025. Submitted to **Pattern Recognition** (IF: 7.5).

2. **Amran Bhuiyan**, Aijun An, Jialie Shen, Jimmy Xiangji Huang. "Non-parametric Normalization for Enhanced Person Re-identification." ***Pattern Recognition***, 111356, 2025.

3. Shiru Wang, Wenna Du, **Amran Bhuiyan**, Zehua Chen. "Personalized Recommendation Method Based on Rating Matrix and Review Text." *Computational Intelligence*, e70024, 2025 (IF: 1.8).

4. JiaJia Wang, Jimmy Xiangji Huang, Xinhui Tu, Junmei Wang, Angela Huang, Md Tahmid Rahman Laskar, **Amran Bhuiyan**. "Utilizing BERT for Information Retrieval: Survey, Applications, Resources and Challenges." ***ACM Computing Surveys***, 2024 (IF: 23.8).

5. **Amran Bhuiyan**, Jimmy Xiangji Huang, Aijun An. "IGMG: Instance-guided Multi-Granularity for Domain Generalizable Person Re-identification." *Computer Vision and Image Understanding*, 240:103905, 2023 (IF: 4.3).

6. **Amran Bhuiyan**, Jimmy Xiangji Huang. "STCA: Spatio-Temporal Cross-Attention Network for Enhancing Video Person Re-identification." *Image and Vision Computing*, 113:104474, 2022 (IF: 4.2).

7. Frank M. Hafner, **Amran Bhuiyan**, Julian F. P. Kooij, Eric Granger. "A Cross-Modal Distillation Network for Person Re-identification in RGB-Depth." *Computer Vision and Image Understanding*, 218:103352, 2022.

8. Hugo Masson*, **Amran Bhuiyan***, Le Thanh Nguyen*, Parthipan Siva, Mehrsan Javan, Eric Granger. "A Survey of Pruning Methods for Efficient Person Re-identification Across Domains." *EURASIP Journal on Image and Video Processing*, 2021 (Equal contribution).

9. Madhu Kiran, **Amran Bhuiyan**, Louis-Antoine Blais-Morin, Mehrsan Javan, Ismail Ben Ayed, Eric Granger. "Flow-Guided Attention Networks for Video-Based Person Re-identification." *Image and Vision Computing*, 113:104246, 2021.

10. Rameswar Panda*, **Amran Bhuiyan***, Vittorio Murino, Amit K. Roy-Chowdhury. "Adaptation of Person Re-identification Models for On-Boarding New Cameras." ***Pattern Recognition***, 96:106991, 2019.

11. **Amran Bhuiyan**, Alessandro Perina, Vittorio Murino. "Exploiting Multiple Detections for Re-identification Systems." *Journal of Imaging*, 4(2):17, 2018 (IF: 2.7).

12. **Amran Bhuiyan**, Ibrahim Azad, Kamal Uddin. "Image Processing for Skin Cancer Features Extraction." *International Journal of Science and Engineering Research*, 4(2), 2013.

Conference Articles:

1. Dong Zhang, Lin Li, Ming Li, **Amran Bhuiyan**, Meng Sun, Xiaohui Tao, Jimmy Huang. *"Modeling Item-Level Dynamic Variability with Residual Diffusion for Bundle Recommendation."* AAAI 2026.

2. Md Tahmid R. Laskar, M. S. Islam, R. Mahbub, A. Masry, M. Rahman, **Amran Bhuiyan**, M. T. Nayeem, S. Joty, E. Hoque, J. Huang. *"Judging the Judges: Can Large Vision-Language Models Fairly Evaluate Chart Comprehension and Reasoning?"* ACL 2025, Industry Track.

3. Md Tahmid Rahman Laskar, Sawsan Alqahtani, M. Saiful Bari, Mizanur Rahman, Mohammad Abdullah Matin Khan, Haidar Khan, Israt Jahan, **Amran Bhuiyan**, Chee Wei Tan, Md Rizwan Parvez, Enamul Hoque, Shafiq Joty, Jimmy Huang. *"A Systematic Survey and Critical Review on Evaluating Large Language Models (LLMs): Challenges, Limitations, and Recommendations."* EMNLP **(Oral)**, 2024.

4. Md Tahmid Rahman Laskar, M. Saiful Bari, Mizanur Rahman, **Amran Bhuiyan**, Shafiq Joty, Jimmy Huang. *"A Systematic Study of ChatGPT on Benchmark Datasets."* ACL 2023 Findings.

5. Djebril Mekhazni, **Amran Bhuiyan**, George Ekladious, Eric Granger. *"Unsupervised Domain Adaptation in the Dissimilarity Space for Person Re-identification."* ECCV 2020.

6. **Amran Bhuiyan**, Yang Liu, Parthipan Siva, Ismail Ben Ayed, Mehrsan Javan, Eric Granger. *"Gated Fusion for Pose-Aligned Person Re-identification."* WACV 2020.

7. Frank M. Hafner, **Amran Bhuiyan**, Julian F. P. Kooij, Eric Granger. *"RGB-Depth Cross-Modal Person Re-Identification."* AVSS 2019.

8. Rameswar Panda*, **Amran Bhuiyan***, Vittorio Murino, Amit K. Roy-Chowdhury. *"Unsupervised Adaptive Re-Identification in Open World Dynamic Camera Networks."* CVPR **(Spotlight)**, 2017. (*Equal contribution.)

9. Xiangping Zhu, **Amran Bhuiyan**, Mohamed Lamine Mekhalfi, Vittorio Murino. *"Exploiting Gaussian Mixture Importance for Person Re-identification."* AVSS **(Oral)**, 2017.

10. **Amran Bhuiyan**, Behzad Mirmahboub, Alessandro Perina, Vittorio Murino. *"Person Re-Identification using Robust Brightness Transfer Functions Based on Multiple Detections."* ICIAP 2015.

11. **Amran Bhuiyan**, Alessandro Perina, Vittorio Murino. *"Exploiting Multiple Detections to Learn Robust Brightness Transfer Functions in Re-Identification Systems."* ICIP **(Oral)**, 2015.

12. **Amran Bhuiyan**, Alessandro Perina, Vittorio Murino. *"Person Re-Identification by Discriminatively Selecting Parts and Features."* ECCV 2014 - **Winner of the Intel Best Paper Award**.

PATENTS

1. Mehrsan Javan, **Amran Bhuiyan**, Yang Liu, Parthipan Siva, Eric Granger, and Ismail Ben Ayed, *'System and Method for Identity Preservative Representation of Persons and Objects Using Spatial and Appearance Attributes*, US Patent Pub. No: US 2022/0383662 A1, Pub. Date: Dec. 01, 2022.

CONFERENCE/ INVITED TALKS

- **Applications of AI in Healthcare.** Invited Talk, MarkiTech.AI Tech in Healthcare Forum, Toronto, 2024.
- **Impact of Reinforcement Learning in Computer Vision.** Guest Lecture, Video Computing Reading Group, University of California, Riverside, Aug 2016.
- **Brightness Transfer Functions for Person Re-Identification.** Oral Presentation, IEEE ICIP, Québec City, Sept 2015.
- **Part-based Feature Importance for Person Re-Identification.** Oral Presentation (**Intel Best Paper**), ECCV, Zürich, Sept 2014.

RESEARCH GRANTS and FELLOWSHIPS

- **SSHRC Insight Grant (Co-Investigator).** *"Domain Generalization for Person Re-identification."* York University - Funded research project on transferable person Re-ID across camera networks (Dec 2022 – Dec 2023).
- **Mitacs Elevate Postdoctoral Fellowship (Canada).** 2019 – 2021 - *Two-year industrial postdoctoral fellowship (competitive award) at ÉTS Montréal & SPORTLOGiQ.*
- **Mitacs Accelerate Research Internship (Canada).** 2018 - *Funded industry–academic research internship at SPORTLOGiQ.*
- **IIT Genova Ph.D. Fellowship (Italy).** 2014 – 2017 - *Doctoral research scholarship from Istituto Italiano di Tecnologia.*
- **Erasmus Mundus Scholarship (European Union).** 2009 – 2011 - *Full scholarship for M.Sc. studies in Europe.*

PROFESSIONAL SERVICE and OUTREACH

- **Conference Organization:** Technical Program Co-Chair & Track Chair - International Conference on Machine Intelligence and Emerging Technologies (MIET 2022); Track Chair - IEEE WI-IAT 2022.
- **Journal Reviewing:** Regular reviewer for top-tier journals in AI, computer vision, and ML, including *IEEE TPAMI*, *Pattern Recognition*, *MDPI Sensors*, and *CVIU*.
- **Conference Reviewing:** Program committee member/reviewer for major conferences: CVPR, ICCV, ECCV, NeurIPS, AAAI, ICML, WACV, AVSS, ICIP, ACL, EMNLP, SIGIR, and KDD.
- **Academic & Community Outreach:** Mentor to diverse student populations; active in interdisciplinary collaborations (CS, engineering, healthcare, sports).

AWARDS and HONORS

- **Intel Best Paper Award** - ECCV 2014. *"Person Re-identification by Discriminatively Selecting Parts and Features."*
- **Academic Merit Scholarship** - University of Dhaka. Awarded for graduating 4th in the B.Sc.
- **Outstanding Reviewer Recognition** (multiple). Acknowledged for reviewing contributions to CVPR, ECCV, and ICCV (2019–2025).

REFERENCES

Prof. Jimmy Xiangji Huang
Director of IR & KM Research Lab
York University, Canada.
Email: jhuang@yorku.ca
http://www.yorku.ca/jhuang/

Prof. Vittorio Murino
University of Verona
37134 Verona, Italy
Email: vittorio.murino@iit.it
https://www.vittoriomurino.com/

Prof. Aijun An
Dept. of Electrical and Computer Science
York University, Toronto, Canada
Email: aan@yorku.ca
https://lassonde.yorku.ca/users/aan

Prof. Eric Granger
Director of LIVIA Lab,
Ecole de Technologie Supérieure (ETS),
Montreal (QC) H3C 1K3, Canada
Email: eric.granger@etsmtl.ca