Md Amran Hossen Bhuiyan

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https://scholar.google.com/citations?user=GvSAjYAAAAAJ&hl=en

RESEARCH INTERESTS

- Computer Vision - Re-identification, Multi-camera Target Tracking, Information and Object Retrieval.
- Natural Language Processing - Large Language Model (LLM) Evaluation and Information Retrieval.
- Machine Learning - Domain Generalization, Transfer Learning, Metric Learning, and Deep Learning.
- Applications - Video Surveillance, Sport Analytics, Healthcare AI, and Data-driven Insights.

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 Applied Physics, 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 for Person Re-Identification.**
  - Proposed non-parametric normalization to enhance generalization performance (PR, 2025).
  - Proposed instance-guided multi-granularity learning for domain-robust features (CVIU, 2023).
  - Designed spatio-temporal attention networks for robust video ReID (IVC, 2022).
- **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**.

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

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

- Generative and Transformation learning for part-based re-identification.
  - Designed and implemented a generative model that segments human appearance into meaningful parts by removing background noise, and applies brightness transfer functions to model appearance changes across cameras, resulting in publications at ECCV 2014, ICIP 2015, and ICIAP 2015.

Master Thesis, Jan 2011 - June 2011
- Computer-Aided Melanoma Skin Cancer Detection.
  - Pioneered the use of segmentation techniques to effectively isolate melanoma skin cancer regions, enabling robust feature extraction from the foreground for improved classification.

INDUSTRIAL RESEARCH EXPERIENCE

Deep learning Advisor, Veyetals, MarkiTech.AI, Oakville, Canada. Feb 2024 - Dec 2024
- Deep Learning for Accurate Heart Rate Measurement from Face Videos.
  - Developed a CNN-based system for non-invasive heart rate and blood pressure estimation from facial videos (rPPG), achieving 95%+ accuracy and deploying it on web and mobile (Android/iOS) platforms.

Industrial Postdoctoral Fellow , Jan 2018 - Mar 2021
École de Technologie Supérieure, & SPORTLOGiQ Inc., Montréal, Canada.
Mentor: **Prof. Eric Granger & Dr. Mehrsan Javan**.
- Cross-Modal, Pose-Aligned, and Efficient Person Re-Identification .
  - 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).
  - Advanced efficient ReID through pruning methods and flow-guided attention networks for video-based person re-identification (EURASIP JIVP 2021, IVC 2021).

TEACHING EXPERIENCE

Adjunct Faculty, York University, Toronto, Canada. Jan 2023 -
- Developed course materials, facilitated hands-on sessions and delivered lectures to introduce the subject of Information and Organizations, and Internet Client-Server Systems.

Instructor, York University, Toronto, Canada. Jun 13 - Jun 20, 2022
SMART-ART Summer Courses 2022 - Introduction to AI
- Developed course materials, organized hands-on sessions and delivered lectures to provide an introduction to the field of Artificial Intelligence.

Associate Professor and Assistant Professor Mar 2021 - May 2022
Dept. of Computer Science and Telecommunication Engineering, and Mar 2012- Dec 2017
Noakhali Science and Technology University, Bangladesh.
- Designed course syllabi and delivered lectures on various subjects, including Artificial Intelligence, Advanced Computer Vision, Database Design, Multimedia Communications, Advanced Digital Signal Processing, Biomedical Signal Processing, Microprocessor, Micro-controller, and Interfacing.

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.

SELECTED JOURNAL PUBLICATIONS

1. **Amran Bhuiyan**, Aijun An, Jialie Shen, and Jimmy Xiangji Huang. *"Non-parametric Normalization for Enhanced Person Re-identification"*, Pattern Recognition, 111356, 2025.
2. Shiru Wang, Wenna Du, **Amran Bhuiyan**, Zehua Chen. *"Personalized Recommendation Method Based on Rating Matrix and Review Text"*, Computational Intelligence, e70024, 2025.
3. 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.
4. **Amran Bhuiyan**, Jimmy Xiangji Huang, Aijun An. *"IGMG: Instance-guided Multi-Granularity for Domain Generalizable Person Re-identification"*, Computer Vision and Image Understanding (CVIU), 240, 103905, 2023.
5. M.K. Uddin, **Amran Bhuiyan**, F.K. Bappee, M.M. Islam, M. Hasan. *"Person Re-Identification with RGB–D and RGB–IR Sensors: A Comprehensive Survey"*, Sensors, 23(1504), 2023.
6. **Amran Bhuiyan**, Jimmy Xiangji Huang. *"STCA: Utilizing a Spatio-Temporal Cross-Attention Network for Enhancing Video Person Re-identification"*, Image and Vision Computing, May 2022, Elsevier, 104474.
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 (CVIU), 2022, 103352, Elsevier.
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, Volume 113, September 2021, Elsevier, 104246.
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. (*Equal contribution.)
11. **Amran Bhuiyan**, Alessandro Perina, Vittorio Murino. *"Exploiting Multiple Detections for Re-identification Systems"*, Journal of Imaging, 4(2), Article 17, MDPI, 2018.
12. **Amran Bhuiyan**, Ibrahim Azad, Kamal Uddin. *"Image Processing for Skin Cancer Features Extraction"*, International Journal of Science and Engineering Research (IJSER), ISSN 2229-5518, Volume 4, Issue 2, February 2013.

CONFERENCE PR0CEEDINGS

1. Md Tahmid R. Laskar, M. S. Islam, R. Mahbub, A. Masry, M. Rahman, **A. 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.

2. 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"*, In the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP) **(Oral)**, 2024.

3. Md Tahmid Rahman Laskar, M Saiful Bari, Mizanur Rahman, **Amran Bhuiyan**, Shafiq Joty, Jimmy Huang. *"A Systematic Study of ChatGPT on Benchmark Datasets"*, In Findings of the 60th Annual Meeting of the Association for Computational Linguistics (ACL'23 Findings), 2023.

4. Djebril Mekhazni, **Amran Bhuiyan**, George Ekladious, Eric Granger. *"Unsupervised Domain Adaptation in the Dissimilarity Space for Person Re-identification"*, In 16th European Conference on Computer Vision (ECCV), 2020.

5. **Amran Bhuiyan**, Yang Liu, Parthipan Siva, Ismail Ben Ayed, Mehrsan Javan, Eric Granger. *"Gated Fusion for Pose-Aligned Person Re-identification"*, In IEEE Winter Conference on Applications of Computer Vision (WACV), 2020.

6. Frank M. Hafner, **Amran Bhuiyan**, Julian F.P. Kooij, Eric Granger. *"RGB-Depth Cross-Modal Person Re-Identification"*, In 2019 16th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS 2019), pp. 1-8, IEEE, 2019.

7. Rameswar Panda*, **Amran Bhuiyan***, Vittorio Murino, Amit K. Roy-Chowdhury. *"Unsupervised Adaptive Re-Identification in Open World Dynamic Camera Networks"*, In IEEE Conference on Computer Vision and Pattern Recognition (CVPR) **(Spotlight)**, 2017. (*Equal contribution.)

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

9. Behzad Mirmahboub, Hamed Kiani Galoogahi, **Amran Bhuiyan**, Alessandro Perina, Baochang Zhang, A. Del Bue, Vittorio Murino. *"Person Re-identification using Sparse Representation with Manifold Constraints"*, In IEEE ICIP **(Oral)**, 2016.

10. **Amran Bhuiyan**, Behzad Mirmahboub, Alessandro Perina, Vittorio Murino. *"Person Re-Identification using Robust Brightness Transfer Functions Based on Multiple Detections"*, In International Conference on Image Analysis and Processing (ICIAP), pp. 449-459, Springer, Cham, 2015.

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

12. **Amran Bhuiyan**, Alessandro Perina, Vittorio Murino. *"Person Re-Identification by Discriminatively Selecting Parts and Features"*, In European Conference on Computer Vision (ECCV) 2014 – Workshop on Visual Surveillance and Re-Identification (VS-Re-ID) – **Winner of the INTEL Best Paper Award**, LNCS Vol. 8927, pp. 147-161, Springer International Publishing Switzerland, 2015.

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.

ACADEMIC PROJECTS AND FUNDING

- Domain Generalization for Person Re-identification, Dec 2022- Dec 2023
  SSHRC Research Funds. York University, Canada.
  - The main objective of this project is to investigate and develop a a new system for accurately recognizing or re-identifying individuals and other objects across a surveillance network.

CONFERENCE/ INVITED TALKS

- **Applications of AI in Healthcare**, MarkiTech.AI Event (2024).
- **Impact of Reinforcement Learning in Computer Vision**, UCR Video Computing Reading Group, Riverside (Aug 2016) .
- **Brightness Transfer Function for Person Re-Identification**, ICIP Conference, Quebec (Sep 2015).
- **Part-based Feature Importance for Person Re-Identification**, ECCV Conference, Zurich (Sep 2014).

AWARDS and HONORS

- Recipient of Postdoctoral Fellowship Award, Canada. May 2022 - Sep 2025
- Recipient of Mitacs Elevate Postdoctoral Fellowship, Canada. Jan 2019 - Mar 2021
- Recipient of Mitacs Accelerate Internships, Canada. Jan 2018 - Dec 2018
- Scholarship funded by Istituto Italiano di Tecnologia (IIT), Italy. Foreign Internship Grant. May 2016 - Oct 2016
- Scholarship funded by Istituto Italiano di Tecnologia (IIT), Italy. Ph.D. Grant. Jan 2014 - Apr 2017
- Erasmus Mundus Scholarship funded by the European Union. Masters Grant. Sep 2009 - June 2011
- Academic Merit Scholarship for securing 4^{th} position in B.Sc. Exam. Jan 2009 - Sep 2009

PROFESSIONAL SERVICES

- **Technical Program Co-Chair and Track Chair** for MIET 2022 and WI-IAT 2022.
- Reviewer for top-tier computer vision journals - IEEE TPAMI, Pattern Recognition, IEEE TCSVT, Sensors, and CVIU.
- Reviewer for leading computer vision and machine learning conferences - CVPR, ICCV, ECCV, NeurIPS, ICML, WACV, AVSS, ICPRAI, and ICIP.
- Reviewer for major NLP and information retrieval conferences — ACL, EMNLP, SIGIR, and KDD.

REFERENCES

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