

MOHAMMAD RAIHANUL BASHAR

✉ mohammadraihanul.bashar@mail.concordia.ca 🏠 mbraihan.github.io

Research Interests

Human-Computer Interaction • eXtended Reality (XR) • 3D User Interface • Human-Centered AI • Metaverse • Cognitive Science

Education

- 2024 – present **Ph.D in Computer Science.**
Department of Computer Science & Software Engineering, [Concordia University](#).
Advisor: [Dr. Anil Ufuk Batmaz](#)
- 2023 **MSc in Computer Science**
Department of Computer Science & Software Engineering, [Concordia University](#).
Fast-track to PhD
Advisor: [Dr. Anil Ufuk Batmaz](#)
- 2013 – 2017 **BSc in Computer Science**
Department of Computer Science, [Independent University, Bangladesh](#).
Effect of EMG Artifacts on Video Category Classification from EEG
Advisor: [Prof. M. Ashraful Amin](#)

Publications

BOOK CHAPTERS

- 2017 [B. 1] Aunnoy K Mutasim, Rayhan Sardar Tipu, **Mohammad Raihanul Bashar**, Md Kafiul Islam, M. Ashraful Amin. Computational Intelligence for Pattern Recognition in EEG Signals. *Computational Intelligence for Pattern Recognition*, Springer-Verlag.

JOURNALS

- 2023 [J. 2] Injamamul Haque Sourov, Faiyaz Alvi Ahmed, Md. Tawhid Islam Opu, Aunnoy K Mutasim, **M. Raihanul Bashar**, Rayhan Sardar Tipu, M Ashraful Amin, and Md Kafiul Islam. EEG-Based Preference Classification for Neuromarketing Application. *Computational Intelligence and Neuroscience*.
- 2020 [J. 1] Amir Jalilifard, Dehua Chen, Aunnoy K Mutasim, **M. Raihanul Bashar**, Rayhan Sardar Tipu, Md. Ahsan-Ul Kabir Shawon, Nazmus Sakib, M Ashraful Amin, and Md Kafiul Islam. Use of spontaneous blinking for application in human authentication. *Engineering Science and Technology, an International Journal*, Elsevier.

FULL CONFERENCE PAPERS

- 2024 [C. 6] **Mohammad Raihanul Bashar**, Anil Ufuk Batmaz. Virtual Task Environments Factors Explored in 3D Selection Studies. *Graphics Interface (ACM GI' 24)*.
- 2018 [C. 5] Aunnoy K Mutasim, **Mohammad Raihanul Bashar**, Rayhan Sardar Tipu, Md Kafiul Islam, M. Ashraful Amin. Effect of Artefact Removal Techniques on EEG Signals for Video Category Classification. *24th International Conference on Pattern Recognition (ICPR' 18)*.
- 2018 [C. 4] **Mohammad Raihanul Bashar**, Rayhan Sardar Tipu, Aunnoy K Mutasim, M. Ashraful Amin. Effect of EMG Artifacts on Video Category Classification from EEG. *Joint 2017 6th International Conference on Informatics, Electronics & Vision (ICIEV) & 1st International Conference on Imaging, Vision & Pattern Recognition (icIVPR)*.
- 2017 [C. 3] Aunnoy K Mutasim, Rayhan Sardar Tipu, **Mohammad Raihanul Bashar**, M. Ashraful Amin. Video Category Classification Using Wireless EEG. *The 10th International Conference on Brain Informatics (BI' 17)*.
- 2017 [C. 2] Abul Al Arabi, Rayhan Sardar Tipu, **Mohammad Raihanul Bashar**, Binoy Barman, Shama Ali Monica, M. Ashraful Amin. Implementation of Low Cost Stereo Humanoid Adaptive Vision for 3D positioning and Distance Measurement for Robotics Application with Self-calibration. *11th Asia Modelling Symposium, (AMS' 17)*.
- 2017 [C. 1] **Mohammad Raihanul Bashar**, Abul Al Arabi, Rayhan Sardar Tipu, Md Tanvir Alam Sifat, Md Zobair Ibnalam, M. Ashraful Amin. 2D Surface Mapping for Mine Detection via Wireless Networking. *2nd International Conference on Control and Robotics Engineering (ICCRE' 17)*.

WORKSHOP

- 2024 [W. 1] Laurent Voisard, Amal Hatira, **Mohammad Raihanul Bashar**, Mucahit Gemici, Mine Sarac, Marta Kersten-Oertel, Anil Ufuk Batmaz. Subtask-Based Virtual Hand Visualization Method for Enhanced User Accuracy in Virtual Reality Environments. *In IEEE VR Workshop on Novel Input Devices and Interaction Techniques (NIDIT' 24)*.

Research Experience

- 2023 – present **EXiT Lab**, Concordia University, Graduate Student Researcher. Montreal, QC. Advisor: Dr. Anil Ufuk Batmaz. Driving research agenda on pushing the frontier of human interaction in eXtended Reality by developing interaction systems that empower human creativity. Publishing at top-tier HCI conferences.

- 2019 – 2021 **AGenCy Lab, IUB**, Independent University, Bangladesh, Research Assistant. Dhaka, BD. Advisor: Prof. M. Ashraful Amin. Develop a high-quality, standardized medicine image dataset with metadata, deploy a recognition model to enhance feature selection, and create a mobile application to assist visually impaired patients in identifying their prescribed pills. Work led to opensource code [O. 3].
- 2018 – 2019 **Computer Vision & Cybernetics, BD**, Independent University, Bangladesh, Research Assistant. Dhaka, BD. Advisor: Prof. M. Ashraful Amin. The goal was to compile a dataset of Bengali letters and numbers for Bangladeshi license plates and develop a custom ANPR system, successfully addressing the lack of open-source datasets and enabling accurate recognition of Bangladeshi license plates. Work led to opensource code [O. 2].
- 2016 – 2018 **Computer Vision & Cybernetics, BD**, Independent University, Bangladesh, Undergraduate Research Assistant. Dhaka, BD. Advisor: Prof. M. Ashraful Amin. With the vision of building a BCI-based video recommender system, we experimented with several state-of-the-art algorithms for each of the submodules (pre-processing, feature extraction, feature selection, and classification) of the Signal Processing module of a BCI system to find out what combination of algorithms best predicts what type of video a person is watching. Work led to publication at BI 2017 [C. 3], ICIEV 2017 [C. 4], ICPR 2018 [C. 5] and a Book Chapter [B. 1] and opensource code [O. 1].

Teaching Experience

- 2023 – present **Teaching Assistant**. Introduction to Game Developments, COMP 376. Undergraduate CS course, Concordia University. Responsibilities: Lead weekly tutorials, mark assignments, and organize final presentations.
- 2023 – present **Teaching Assistant**. Advanced Game Developments, COMP 6331. Graduate CS course, Concordia University. Responsibilities: Lead weekly tutorials, mark assignments, and organize final presentations.
- Winter 2023 **Teaching Assistant**. Human-Computer Interaction, SOEN 6751. Graduate CS course, Concordia University. Responsibilities: Mark assignments and exams, design course projects, guide students on project development, and organize final presentations.
- Fall 2018 **Teaching Assistant**. Image Processing & Pattern Recognition, CSE 420. Undergraduate CS course, Independent University, Bangladesh. Responsibilities: Lead weekly tutorials, mark assignments, and organize final presentations.
- Fall 2018 **Teaching Assistant**. Data Mining and Warehouse, CSE 417. Graduate CS course, Independent University, Bangladesh. Responsibilities: Lead weekly tutorials, mark assignments, design course projects, and organize final presentations.

Industry Experience

Fall 2024	Mitacs Accelerate Internship , Research Intern. Remote. SonoNurse Inc. , Concordia University, Montreal, QC.
2022 – 2023	Senior Engineer, MLOps. Quantigo AI , Dhaka, Bangladesh. Led the development and launch of two web applications, including a workforce management system, while providing customized ML-assisted data annotation solutions, developing an in-house video annotation platform, and establishing foundational architectures for current and future projects.
2021 – 2022	Senior AI Engineer. OPUS Technology Limited, Dhaka, Bangladesh. Developed an intelligent agent for CS:GO using offline RL, supervised the creation of an e-sports game prediction system, implemented a matchmaking system with AWS Gamelift, streamlined MLOps integration with cloud platforms, mentored the ML team on RL and clean coding practices, and maintained the company's largest project while contributing reusable modular-helper classes.
Summer 2021	Machine Learning Engineer. Expert Consortium Limited, Dhaka, Bangladesh. Developed an early shoplifting detection system.
2020 – 2021	Software Engineer. Maxis Systems Limited, Dhaka, Bangladesh. Integrated a DevOps pipeline as the development platform, developed scalable and maintainable microservice solutions, and built a platform for business analytics leveraging ML and Data Science.

Awards, Scholarships and Fellowships

2024	Concordia Conference and Exposition Allowance , School of Graduate Studies, Concordia University
2024	FRS Scholarship for PhD Student , CAD 22,000/year, Concordia University
2024	Concordia International Tuition Award of Excellence , CAD 44,893, Concordia University
2023	FRS Scholarship for MSc Student , CAD 24,000/year, Concordia University
2023	Concordia Merit Scholarship , CAD 5,000, Concordia University
2024	SECS Award , Independent University, Bangladesh

Services and Volunteering

ORGANIZING

2025 Student Volunteer Chair. ACM SUI 2025.

REVIEWING

2024 **Reviewer.** The ACM Conference on Human Factors in Computing Systems (CHI)
2024 **Reviewer.** The ACM Conference on Mobile Human-Computer Interaction (MobileHCI)
2024 **Reviewer.** The IEEE International Symposium on Mixed and Augmented Reality (ISMAR)
2024 **Reviewer.** The ACM Symposium on Spatial User Interaction (SUI)
2024 **Reviewer.** The IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)

Skills

I have expertise in developing interactive VR and AI systems, as well as full-stack web development, encompassing both frontend and backend. Additionally, I have experience in designing, training, and evaluating deep learning models. I am familiar with the following programming languages, frameworks, and research methodologies.

Programming Languages: Python, C++, C#, HTML/CSS/JavaScript

Frameworks: PyTorch, Scikit-Learn, Unity, Unreal, Flask, React

Research Methodologies: User Studies (quantitative/qualitative), DL experiments.

References

Available upon requests.