Md Raihan Mia, Ph.D. Candidate

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EDUCATION

2022 - Present	Ph.D., Marquette University, Advisor: Dr. Sheikh Iqbal Ahamed, Ph.D. Co-advisor: Dr. Samuel Nemanich, Ph.D., MSCI
2022 - 2025	M.Sc., Marquette University, Department of Computer Science CGPA: 3.928/4.00
2014 - 2019	B.Sc., Bangladesh University of Engineering and Technology Major: Computer Science and Engineering

EMPLOYMENT

2022 - Present	**Graduate Research Assistant** at Marquette University
Summer 2024 and 2025	**Research Intern**, Ubitrix Inc, Milwaukee, WI, USA
2019 - 2020	Jr. **Software Engineer**, Era InfoTech Ltd, Dhaka, Bangladesh
2018 - 2020	**Research Assistant**, eSRD-Lab, Department CSE, BUET

PROFESSIONAL CONTRIBUTIONS

1. **A Framework for mHealth App Security and Privacy Analysis** ***Summer Research Intern***

HIPAAChecker.health provides software tools for security vulnerability detection and HIPAA compliance checking. Funded by **NIH STTR Phase I, Phase II**, and CTC-Wisconsin.

Responsibilities:

- Research and development on HIPAA security assessment and risk scoring
- Data analysis and security model evaluation to improve the vulnerability detection engine
- Research on LLM and GPT model for security scanning and remediation assistance

2. **Game-based Mobile-Health Quantification of Upper-Limb Motor Performance in Children with Hemiparetic Cerebral Palsy (NIH R21)** ***Graduate Research Assistant***

An iPad-based neuromotor assessment games requiring visually guided multi-joint movements, fine motor and finger control, and bimanual coordination.

Responsibilities:

- Experimental design and develop iPad game/tasks and data server to conduct data collection
- Collect, process and analyze spatiotemporal, brain signal, IMU+EMG and 3D motion data
- Research on corticomuscular coherence, movement trajectory patterns and neuromotor behavior

Technologies: iOS Swift, Python, AWS, Vicon, OpenSim, Matlab, EEGLab, EEGWorks

3. **Motor skill learning in young children born preterm (NIH R03)** ***Graduate Research Assistant***

Retention-based motor skills learning and performance analysis using iPad games and standardized clinical assessments i.e., MABC-*2, BOT-3, Purdue Pegboard Test*

Responsibilities:

- Study design and app development to conduct data collection
- Collect, process and analyze spatiotemporal, and standardized motor skills learning data

- Research on motor learning, self-supervise learning, and representation learning

Technologies: iOS Swift, Python, SQL, AWS, Matlab

3. **National Clinical Data Warehouse of Bangladesh** ***Research Assistant***
- Design and develop infrastructure of national clinical data warehouse of Bangladesh
- Perform ETL, data processing, curation, datamart implementation, and OLAP operations
- Experiment with latency and performance of big data infrastructure

Technologies: Python, Angular, PostgreSQL, Hadoop, HIVE, Ambari, Superset

***See more details on my **RESEARCH SPOTLIGHTS**

SKILLS AND EXPERTISE

AI & Neuroscience	Big data, Pytorch, TF, Keras, CMC, Representation Learning Spatiotemporal, Biosignals, Sensors, IMU+EMG, EEG, 3D Motion
Programming	Python, C/C++, MATLAB, iOS Swift, JavaScript SQL, HQL, NoSQL, Redis
Data Visualization	Codebook, OLAP, Tableau, Superset, Plotly, Seaborn, etc. Heatmap/topological map, Statistical graphs, etc.
Cloud Computing	AWS, GCP, Git, Docker, OAK Ridge National Lab, Raj Cluster
Tools	Vicon Nexus, OptiTrack, OpenSim, EEGLAB, EEGWorks

HONORS AND AWARDS

2022 **Best Paper Award**
Elsevier Smart Health Journal Best Paper Awards 2022
A privacy-preserving National Clinical Data Warehouse: Architecture and analysis
Mia, M R., Hoque, A. S. M. L., Khan, S. I., Ahamed, S. I., Volume 23, March 2022

2022 **NSF Travel Grant**
To attend IEEE/ACM CHASE 2022 at Washington D.C.

2018 **Best Innovative Project Award**
Mrs. Sultana Begum Award Best Innovative Project, 2018, project entitled ”Internet of Things Based Smart Prayer Time Management System”

PROFESSIONAL AFFILIATIONS AND SERVICES

Program Committee Member
IEEE SERVICES 2023 (IEEE Carl K. Chang Symposium on Software Services Engineering)
IEEE COMPSAC 2023 (Smart & Connected Health)

Reviewer
Springer - Soft Computing
Mary Ann Liebert - Games for Health Journal

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

1. **Mia, M.R.**, Ahamed, S.I. and Nemanich, S., 2025. Gamified mHealth System for Evaluating Upper Limb Motor Performance in Children: Cross-Sectional Feasibility Study. JMIR Serious Games, 13(1), p.e57802. DOI: 10.2196/57802
2. **Mia, M.R.,** Ahamed, S.I., Fial, A. and Nemanich, S., 2024. A Scoping Review on Mobile Health Technology for Assessment and Intervention of Upper Limb Motor Function in Children with Motor Impairments. Games for Health Journal, 13(3), pp.135-148. https://doi.org/10.1089/g4h.2023.0224
3. Aktar, S., Ahamad, M. M., Rabbani, M., Tian, S., **Mia, M. R.**, Tabassum, F., ... & Ahamed, S. I. (2025). A Systematic Review on Eye as a Biomarker and an Application of Quantum Neural Network. *Cureus Journals, 2(1)*. DOI: 10.7759/s44389-025-03800-4

4. Ahmmed, S., Mondal, M.R.H., **Mia, M.R.,** Adibuzzaman, M., Hoque, A.S.M.L. and Ahamed, S.I., 2023. A Novel Approach for Standardizing Clinical Laboratory Categorical Test Results Using Machine Learning and String Distance Similarity. *Heliyon*. https://doi.org/10.1016/j.heliyon.2023.e21523
5. Thareja, S., Yang, X., **Mia, M. R.**, Upama, P. B., Torres, S. P., Coroft, L. J., ... & Whittle, J. (2023). 441 Southeastern Wisconsin Community-Based Participatory Research using the All of Us Researcher Workbench. *Journal of Clinical and Translational Science*, *7*(s1), 131-131. https://doi.org/10.1017/cts.2023.469
6. **Mia, M. R.,** Shahriar, H., Valero, M., Sakib, N., Saha, B., Barek, M. A., ... & Ahamed, S. I. (2022). A comparative study on HIPAA technical safeguards assessment of android mHealth applications. *Smart Health*, *26*, 100349. https://doi.org/10.1016/j.smhl.2022.100349
7. **Mia, M. R**., Hoque, A. S. M. L., Khan, S. I., & Ahamed, S. I. (2022). A privacy-preserving national clinical data warehouse: Architecture and analysis. *Smart Health*, *23*, 100238. https://doi.org/10.1016/j.smhl.2021.100238
8. Ishmam, A. M., **Mia, M. R.**, Purabi, S. A., Rashed, R., Chellappan, S., & Al Islam, A. A. An Integrated Digital Platform for Bridging Gaps between General Public, Donors, and Social Welfare Organizations Working for Street Children in Bangladesh. https://arxiv.org/abs/2003.10504

CONFERENCE PROCEEDINGS/ABSTRACT

1. **Mia, MR,** Ahamed SI, and Nemanich S. STCRL: Spatiotemporal Contrastive Representation Learning to Decode Movement Patterns During Motor Skill Learning. *39th Annual Conference on Neural Information Processing Systems (NeurIPS 2025)*. (In review).
2. **Mia, M.R.,** Rashid, M.B., Chowdhury, A.,Barek, M.A., Zavin, S.R., Rahaman, M.A., Rahman, M.M., Riad, K.I., Shahriar, H., Ahamed, S.I., HIPAAScoring: Vulnerability Scoring Model for HIPAA Security and Privacy Assessment. *31st USENIX Security Symposium*. (In review).
3. **Mia MR**, Ahamed SI, Cassandra k, Alam S, Nemanich S. Self-Supervised Learning to Quantify Motor Control Strategies from Spatiotemporal Movement Trajectories in Young Children. 2025 *American Society of Neurorehabilitation (ASNR)* Annual Meeting, April 23-25 at Atlanta, Georgia. link
4. Mia, M.R., Kemmel-Bartletti, C., Ahamed, S.I. and Nemanich, S., 2025. Motor Skill Learning in School-Age Children Tested with a Gamified Mobile Health System. *Archives of Physical Medicine and Rehabilitation*, *106*(5), pp.e7-e8. https://doi.org/10.1016/j.apmr.2025.03.028
5. Ashenhurst, L. T., Kemmel-Bartletti, C., **Mia, M. R.**, Nemanich, S. T., Battaglia, A., & Smithberg, M. (2025). Implementing a Novel Bimanual Visuomotor Game on an iPad to Assess Motor Skill Retention Among Children Born Term & Preterm. *American Journal of Occupational Therapy, 79*. link
6. Rabbani, M., Alam, S., **Mia, M.R.**, Parida, A., Iqbal, I., Kolli, H., Sridevi, P., Alam, K.S., Upama, P.B., Khan, R.A. and Ahamed, S.I., 2024, July. Listening to the Brain: A Novel Approach to Understanding Cerebral Dynamics through Blood Flow Sounds. In *2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC)* (pp. 950-957). IEEE. DOI:10.1109/COMPSAC61105.2024.00131
7. Riad, A.K.I., Barek, M.A., Rahman, M.M., Akter, M.S., Islam, T., Rahman, M.A., **Mia, M.R.**, Shahriar, H., Wu, F. and Ahamed, S.I., 2024, July. Enhancing HIPAA Compliance in AI-driven mHealth Devices Security and Privacy. In *2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC)* (pp. 2430-2435). IEEE. DOI: 10.1109/COMPSAC61105.2024.00390
8. Hoque, A.S.M.L., **Mia, M.R.**, Abdullah, M.S., Islam, M.J., Nath, B.C.D., Rahman, M.T. and Ahamed, S.I., 2024, July. BlockPRLS: Blockchain-Based Patient Record Linkage System for Big Data Analytics. In *2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC)* (pp. 877-886). IEEE. DOI: 10.1109/COMPSAC61105.2024.00121
9. **Mia, M.R.**, Zahid, A. H., Nath, B. C. D., & Hoque, A. S. M. L. (2020, December). A Conceptual Design of Virtual Internship System to Benchmark Software Development Skills in a Blended Learning Environment. In *2020 23rd International Conference on Computer and Information Technology (ICCIT)* (pp. 1-6). IEEE. https://doi.org/10.1109/ICCIT51783.2020.9392670
10. **Mia, M. R.**, & Hoque, A. S. M. L. (2019, May). Question bank similarity searching system (qb3s) using nlp and information retrieval technique. In *2019 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT)* (pp. 1-7). IEEE. https://doi.org/10.1109/ICASERT.2019.8934449