Tauseef Ibne Mamun

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RESEARCH METHODS/TOOLS

- Behavioral studies with human subjects
- Usability Evaluation in both real-time and simulated environments (eye-tracking, driving simulator, in-vehicle systems, healthcare systems)
- Cognitive Task Analysis (CTA)
- Computational modeling
- Software development
- Development of R libraries for data management and interpretation

EDUCATION

Michigan Technological University | Houghton, MI
Ph.D. Applied Cognitive Science and Human Factors 2019 – 2023

Michigan Technological University | Houghton, MI
MS Applied Cognitive Science and Human Factors 2019 – 2021

Michigan Technological University | Houghton, MI
Graduate Certificate Artificial Intelligence in Healthcare 2020 – 2021

Courses- Human Factors in Healthcare, Intro to AI in Health, Population Health Informatics

Ahsanullah University of Science and Technology | Dhaka, Bangladesh
BS Computer Science & Engineering 2011 – 2015

RESEARCH EXPERIENCE

Michigan Technological University, Cognitive and Learning Sciences | Houghton, MI
Research Assistant, July 2018 – Current
Tasks:

- Social media data analysis (qualitative data) and human behavior analysis in autonomous driving while giving user-centric explanations from social media for human-AI collaboration.
- Designing novel explanation methods for the human-AI team.
- Developing computational models for different scenarios, e.g., pandemic human travel patterns.
- Behavioral analysis of drivers in rail crossings through statistical models and semi-structured interviews; also determining the usability of new systems in rail crossings.

- ❖ Working/Worked with Defense Advanced Research Projects Agency (DARPA) and Federal Railroad Administration (FRA)

PRACTICUM

1. PROJECT: **EXPLAINABLE AI (XAI) DARPA Program**
   Supervisor: Robert Hoffman
   Institute for Human and Machine Cognition 2020

2. PROJECT: **RAIL CROSSING VIOLATION WARNING APPLICATION (FRA Project)**
   Supervisor: Elizabeth Veinott
   Center for Human-Centered Computing 2021

INDUSTRY EXPERIENCE

Mighty Egg Technologies | Canada/Bangladesh
Programmer Analyst, 2015 – 2018
Tasks:

- Database Design & API development.
- Web and Mobile App Development.
- Software deployment in Amazon Web Service,
- Digital Ocean, Heroku.

PUBLICATION AND PRESENTATIONS

Conference Papers:

1. Mueller, S. T., Alam, L., Funke, G. J., Linja, A., **Ibne Mamun, T.**, & Smith, S. L. (2020, December). Examining methods for combining speed and accuracy in a Go/No-Go vigilance task. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 64, No. 1, pp. 1202-1206). Sage CA: Los Angeles, CA: SAGE Publications.
2. **Mamun, T. I.**, Baker, K., Malinowski, H., Hoffman, R. R., & Mueller, S. T. (2021, September). Assessing collaborative explanations of ai using explanation goodness criteria. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 65, No. 1, pp. 988-993). Sage CA: Los Angeles, CA: SAGE Publications.
3. **Mamun, T**. **I.**, Hoffman, R. R., & Mueller, S. T. (2021, July). Collaborative Explainable AI: A non-algorithmic approach to generating explanations of AI. In *International Conference on Human-Computer Interaction* (pp. 144-150). Springer, Cham.
4. **Ibne Mamun**, T., Alam, L., Hoffman, R. R., & Mueller, S. T. (2022, September). Assessing Satisfaction in and Understanding of a Collaborative Explainable AI (Cxai) System through User Studies. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 66, No. 1, pp. 1270-1274). Sage CA: Los Angeles, CA: SAGE Publications.
5. **Mamun, T. I.**, & Mueller, S. T. (2023). The Use of Social Forums to Train Users about Shortcomings of Tesla Full Self-driving (FSD). *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. In Press.

6. Nadri, C., Lautala, P., Veinott, E. S., **Mamun, T. I.**, Dam, A., & Jeon, M. (2023, September). Improving Safety At Highway-Rail Grade Crossings Using In-Vehicle Auditory Alerts. In Adjunct Proceedings of the 15th International Conference on Automotive User Interfaces and Interactive Vehicular Applications (pp. 346-347).

Journal Articles:

1. **Mamun, T. I.**, & Alam, L. (2021) Predicting Depression using a Biochemistry Profile and Machine Learning for Better Risk Stratification. *International Journal of Computer Applications*, *975*, 8887.
2. Linja, A., **Mamun, T. I.**, & Mueller, S. T. (2022). When Self-Driving Fails: Evaluating Social Media Posts Regarding Problems and Misconceptions about Tesla's FSD Mode. *Multimodal Technologies and Interaction*, *6*(10), 86.
3. Onik, A. R., Haq, N. F., Alam, L., & **Mamun, T. I.** (2015). An analytical comparison on filter feature extraction method in data mining using J48 classifier. *International Journal of Computer Applications*, *124*(13).
4. **Mamun, T. I.**, & Alam, L. (2016). Android Security Vulnerabilities Due to User Unawareness and Frameworks for Overcoming Those Vulnerabilities. *International Journal of Computer Applications*, *975*, 8887.

Technical and Archival Reports

1. Mueller, S. T., Veinott, E. S., Hoffman, R. R., Klein, G., Alam, L., **Mamun, T.**, & Clancey, W. J. (2021). Principles of explanation in human-AI systems. *arXiv preprint arXiv:2102.04972*.
2. Mueller, S. T., **Mamun, T. I.**, & Hoffman, R. R. (2021). *Development and Investigation on a Collaborative XAI System (CXAI)*. Technical Report.
3. Mueller, S., Hoffman, R., Klein, G., **Mamun, T.**, & Jalaeian, M. (2021). Non-algorithms for Explainable Artificial Intelligence. *Applied AI Letters*.
4. **Mamun, T. I.** (2021). *Investigating the Impact of Online Human Collaboration in Explanation of AI Systems* (MS dissertation, Michigan Technological University).
5. Alam, L., Linja, A., **Mamun, T. I.**, & Mueller, S. (2020). Agent-based epidemic simulation models in R.
6. Mueller, S. T., Cischke, K., Alam, L., & **Mamun, T.** (2021) A Computational Cognitive Model of Informative and Persuasive Explanations of Artificial Intelligence Systems.
7. Zhang, K., Lautala, P., Souleyrette, R. R., Tan, Y., Yang, Y., Hung, Y. C., ... & Wang, T. (2023). *Developing Safe and Efficient Driving and Routing Strategies at Railroad Grade Crossings based on Highway-Railway Connectivity* (No. DOT/FRA/ORD-23/14). United States. Department of Transportation. Federal Railroad Administration.

LEADERSHIP EXPERIENCE

Vice President
Bangladeshi Student Association at Michigan Technological University 2020 – 2021

Vice President
Ahsanullah University of Science & Technology's Computer Science & Engineering Society 2014 – 2015

General Secretary
Ahsanullah University of Science & Technology's Computer Science & Engineering Society 2013 – 2014

Member
Ahsanullah University of Science & Technology's Computer Science & Engineering Society 2011– 2013

President (Photography Department)

Notre Dame Nature Study Club 2009 – 2010

SKILLS

Software and Programming Expertise

- R Statistical program
- Python
- C
- PHP
- Psychology Experiment Building Language (PEBL)
- Ruby
- C++
- Java
- Ruby

AWARDS/FELLOWSHIP

- 3rd Place in Computing[MTU] showcase Poster Session 2022
  Link: https://blogs.mtu.edu/icc/2022/10/computingmtu-showcase-poster-session-winners/
- Recipient of MTU's Doctoral Finishing Fellowship – Fall 2023
  Link: https://blogs.mtu.edu/gradschool/2023/09/11/doctoral-finishing-fellowship-fall-2023-recipient-tauseef-ibne-mamun/