

## Tauseef Ibne Mamun

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### 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

### ***Methodologies Expertise***

- Cognitive Task Analysis
- Cognitive Modelling
- Experiment Design and Data Collection
- Basic and Applied Statistical Analysis Techniques
- Qualitative and Quantitative Data Analysis
- Software Quality Evaluation
- Prototyping
- Healthcare, Explainable AI, and Rail System Evaluation
- System Usability Assessment

## 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