S M Hasan **Mansur**

PhD Candidate in Computer Science · Researcher (Software Engineering-HCI)

Fairfax, Virginia, USA

smhasanmansur@gmail.com | smhasanmansur.netlify.app | hasanmansur | smhasanmansur | S M Hasan Mansur

Summary

Research focus: *"Automated Software Engineering via Multimodal Machine Learning"*. **Research Interests**: Software Engineering, HCI, Machine Learning, Generative AI and Large Language Model (LLM). **Publication track record** in top-tier SWE venues. **5+ years** of professional experience in developing scalable, distributed, and enterprise-grade products. Open to relocation and **no sponsorship required** (I-140 approved).

Professional Experience

George Mason University — *Virginia, USA*

Graduate Research Assistant — *May 2021 - Aug 2024*

- Areas of Contribution: Ethical Software Design, Software Evolution, Software Accessibility and Software Documentation.
- Currently leading a research project aimed toward developing a multimodal model (vision-code-comment) for code summarization.
- Designed and developed ***AidUI***, an automated approach to detect and localize deceptive design patterns on UIs.
- Co-contributor of ***MotorEase***, an approach to detect motor-impairment accessibility violations in app UIs.
- Co-contributor of ***GUIEvo***, an approach to update UI code by detecting changes between existing and proposed designs.
- Collaborated in developing datasets to serve as benchmarks for ***Bug Reporting*** and ***Bug Localization***.

George Mason University — *Virginia, USA*

Graduate Teaching Assistant — *Aug 2024 - Current | Aug 2018 - May 2021*

- Mentored students, graded assignments, and proctored exams. Courses: Python Programming, Database, Computer Vision, Formal Methods.

Ice9 Ltd. — *Dhaka, Bangladesh*

Software Engineer — *Apr 2017 - Jul 2018*

- Member of the core engineering team responsible for the development and maintenance of ***SMASHBOARD.CO***, a social CRM product.
- Collaborated with the Technical Lead on strategic planning and decision-making for architecture design, development, testing and deployment.
- Lead the development and integration of social media query management and analytics module for INSTAGRAM.
- Optimized database and implemented master-replica architecture to resolve the sync delay of real time social queries.
- Collaborated in implementing the migration of the core product from Rackspace to AWS.

Synchronous ICT — *Dhaka, Bangladesh*

Software Engineer — *Feb 2015 - Apr 2017*

- Lead the team to develop user management, search and notification platforms of project ***COMX***, an in-house application framework.
- Assessed the capacity to deliver, formed sprints and released duration based development milestones.

Dcastalia — *Dhaka, Bangladesh*

Software Engineer — *Aug 2013 - Jan 2015*

- Developed and published ***HE BUSINESS MANAGER***, a native Android app for inventory management of healthcare products.
- Collaborated with the backend team on requirements analysis, architecture design, development, testing and deployment.

Mercedes-Benz Group AG (former Daimler AG) — *Ulm, Germany*

Student Intern — *Oct 2012 - Jul 2013*

- Developed a ***KVP*** (key-value pair) parser to convert the unstructured stream of environment perception data into a canonical form.

Grameenphone Ltd. — *Dhaka, Bangladesh*

System Engineer — *Jul 2007 - Feb 2011*

- Member of the transmission network configuration and optimization team to serve over 20 million mobile users.

Publications

- Arun Krishnavajjala, **S M Hasan Mansur**, Justin Jose, Kevin Moran, *"MotorEase: Automated Detection of Motor Impairment Accessibility Issues in Mobile App UIs"*, *ICSE'24*
- Junayed Mahmud, Nadeeshan De Silva, Safwat Ali Khan, Seyed Hooman Mostafavi, **S M Hasan Mansur**, Oscar Chaparro, Andrian (Andi) Marcus, Kevin Moran, *"On Using GUI Interaction Data to Improve Text Retrieval-based Bug Localization"*, *ICSE'24*
- Sabiha Salma, **S M Hasan Mansur**, Kevin Moran, Yule Zhang, *"GUIEvo: Automated Evolution of Mobile Application GUIs from Mockups"*, *MSR'24*
- **S M Hasan Mansur**, Kevin Moran, *"Toward Automated Tools to Support Ethical GUI Design"*, *ICSE'23: Companion Proceedings*
- **S M Hasan Mansur**, Sabiha Salma, Damilola Awofisayo, Kevin Moran, *"AidUI: Toward Automated Recognition of Dark Patterns in User Interfaces"*, *ICSE'23*
- Tyler Wendland, Jingyang Sun, Junayed Mahmud, **S M Hasan Mansur**, Steven Huang, Kevin Moran, Julia Rubin, Mattia Fazzini, *"AndroR2: A Dataset of Manually-Reproduced Bug Reports for Android apps"*, *MSR'21*

Tech Skills

Programming	Python, Javascript, Java, C
Databases	MySQL, MongoDB, Redis, Elasticsearch, SQLite
Libraries	OpenCV, NumPy, Matplotlib, Pandas, Socket.IO
ML/DL/NLP	Transformer, LLM finetuning, PyTorch, Hugging Face, scikit-learn, spaCy
Backend/Cloud/DevOps	Node.js, Express.js, REST API, AWS, Docker, Git

Selected Research

Multimodal Code Summarization

Ongoing

Principal Contributor | SAGE Lab, UCF

- *Goal*: To investigate how visual information from UI impacts in automated code summarization.
- Identified the research gap after conducting literature review of related works. Formulated the design of approach to address the gap.
- Developed the data extraction pipeline to collect and map multi-modal data (code, comment, UI) from open-source app repositories.
- Currently leading the team to conduct data exploratory analysis and labeling of the dataset.
- Currently developing a model that aims toward learning from multi-modal data for code summarization.

AidUI

Published, ICSE'23

Principal Contributor | SAGE Lab, UCF

paper link, *project repo*

- *AidUI* is an automated approach to detect and localize deceptive design patterns on UIs.
- Developed a unified taxonomy and a set of heuristic rules to detect visual-textual cues that signify the presence of deceptive UI design patterns.
- Automated the data pipeline to extract UIs from publicly available app usage videos and screenshots by prior studies.
- Designed and developed an approach that leverages computer vision and NLP techniques to detect different deceptive patterns on UI.
- Implemented an automated evaluation pipeline. Dockerized and published research artifacts in a public repository.

MotorEase

Published, ICSE'24

Co-Contributor | SAGE Lab, UCF

paper link, *project repo*

- *MotorEase* is an approach to detect motor-impairment accessibility violations in app UIs.
- Developed the initial prototype of the "Semantic Text Matching" component of the automated approach.
- Collaborated with the lead contributor on labeling and curation of the dataset.

Education

2018-25	**George Mason University**, PhD candidate in Computer Science	*Virginia, USA*
2023	**George Mason University**, MS in Computer Science	*Virginia, USA*
2007	**Shah Jalal University of Science & Technology**, BS in Computer Science	*Bangladesh*

Honors & Awards

2023	**NSF Travel Award**, ICSE'23	*Australia*
2022	**Best Poster Presentation Award**, GMU CS Research Symposium	*Virginia, USA*
2019	**Summer Research Initiation Award**, GMU CS Dept.	*Virginia, USA*

Selected Open Source Projects

2020	**Ontorjal**, Implementation of DNS client & Distance Vector Routing protocol.	*project repo*
2020	**Drishtipat**, Implementation of different concepts/topics of Computer Vision.	*project repo*
2017	**Tasky**, A backend boilerplate featuring Role Based Access Control, Searching, Token Authentication, TDD.	*project repo*

Professional Services

2024	**Junior PC Member**, MSR'24
2022	**Co-Reviewer**, MSR'22
2021-23	**External Reviewer**, ICSE'21, ICSE'23, SANER'22, SANER'23, ASE'22, MSR'21, ICPC'21

Volunteering

2022	**Co-Mentor**, Aspiring Scientists Summer Internship Program, GMU
2021-22	**Director-Web Services**, Bangladeshi Graduate Student Association, GMU
2002-07	**Member**, KIN, Humanitarian Organization, SUST, Bangladesh