

# S M Hasan Mansur

PHD CANDIDATE IN COMPUTER SCIENCE · RESEARCHER (SOFTWARE ENGINEERING-HCI)

Washington DC Metro Area, USA

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## 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 '25 - Current | May '21 - Aug '24

- Major areas of contribution: Software Documentation, Ethical Software Design, Software Accessibility.
- Currently leading the project **MultiC2C**, to investigate on multimodal-LLMs capabilities in capturing UI semantics for code summarization.
- Designed and developed the overall architecture of **AidUI**, an automated approach to detect and localize deceptive design patterns on UIs.
- Prototyped the *Semantic Text Matching* component of **MotorEase**, an approach to detect motor-impairment accessibility violations in app UIs.
- Collaborated in developing datasets to serve as benchmarks for **Software Evolution**, **Bug Reporting** and **Bug Localization**.

### George Mason University

Virginia, USA

GRADUATE TEACHING ASSISTANT

Aug '24 - May '25 | Aug '18 - May '21

- Conducted lab sessions, mentored students, graded assignments, and proctored exams.
- Courses: Python Programming, Database, Computer Vision, Formal Methods.

### Ice9 Ltd.

Dhaka, Bangladesh

SOFTWARE ENGINEER

Apr '17 - Jul '18

- 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 synchronization delay of real time social media queries.
- Collaborated in implementing the migration of the core product from Rackspace to AWS.

### Synchronous ICT

Dhaka, Bangladesh

SOFTWARE ENGINEER

Feb '15 - Apr '17

- Lead the team to develop user management, search and notification platforms of project **COMX**, an in-house application framework.
- Assessed team's capacity to deliver, formed sprints and released duration based development milestones.
- Established standard software engineering practices like version controlling, issue and project tracking.
- Documented technical specifications and maintained all reports pertaining to the development process.

### Dcastalia

Dhaka, Bangladesh

SOFTWARE ENGINEER

Aug '13 - Jan '15

- 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 '12 - Jul '13

- 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 '07 - Feb '11

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

## Tech Skills

**Programming** Python, Javascript, Java, C

**Databases** MySQL, MongoDB, Redis, Elasticsearch, SQLite

**Libraries** OpenCV, NumPy, Matplotlib, Pandas, Socket.IO

**ML/DL/NLP** LLM (prompting, finetuning), PyTorch, Hugging Face, LangChain, scikit-learn, spaCy

**Backend/Cloud/DevOps** Node.js, Express.js, REST API, AWS, Docker, Git

## Selected Research

### Multimodal Code Summarization

Ongoing

#### PRINCIPAL CONTRIBUTOR

- *Goal:* To investigate on Multimodal-LLMs capabilities in capturing UI semantics for code summarization.
- Automated the data extraction pipeline to collect and map multi-modal data (code, comment, UI) from open-source app repositories.
- Lead the team to develop ground truth code summaries by augmenting UI information.
- Formulated the design of experiments that include different prompt techniques, input modalities and LLMs.
- Developed the pipeline for both lexical and semantic similarity based quantitative evaluation.

### AidUI

Published, ICSE'23

#### PRINCIPAL CONTRIBUTOR

[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

[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.

## 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*

## Education

2018-25	<b>George Mason University</b> , PhD candidate in Computer Science	Virginia, USA
2023	<b>George Mason University</b> , MS in Computer Science	Virginia, USA
2007	<b>Shah Jalal University of Science &amp; Technology</b> , BS in Computer Science	Bangladesh

## Honors & Awards

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

## Professional Services

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

## Volunteering

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