

Md Touhidul Islam

Location: State College, PA **Email:** touhidul.shohan@gmail.com **Phone:** +1-814-852-9392
[Personal Website](#) [LinkedIn](#) [GitHub](#) [Google Scholar](#) [Portfolio](#)

SUMMARY

8+ years building distributed, ML, and full-stack systems (**3+** in industry, **5+** in PhD). PhD research: Accessibility, Computer Vision, Applied ML, HCI. Penn State Teaching Fellow, **Distributed Systems**. First-author **award-winning** papers at top-tier venues.

EDUCATION

Ph.D. in Informatics	College of IST, Penn State University	GPA: 3.97/4	Jan 2021 – May 2026 (Expected)
M.Sc. in Informatics	College of IST, Penn State University	GPA: 3.97/4	Jan 2021 – Feb 2024
B.Sc. in Computer Science & Engg	Bangladesh University of Engineering & Technology	GPA: 3.91/4	Feb 2013 – Sept 2017

WORK EXPERIENCE

Software Engineer	Reve Systems	Nov 2017 - Aug 2019
– Developed a Bengali screen reader with custom OCR + TTS pipeline, improving word-level accuracy by 16% vs. baseline		
– Built core modules for a high-throughput distributed telecom billing system, enabling 20k+ daily transactions with 40% lower latency than the legacy system—through schema/index optimization and Kafka-based asynchronous processing		
R&D Engineer	Bangladesh University of Engineering and Technology	Sept 2019 – Dec 2020
– Built a distributed blockchain storage system with containerized microservices, reducing per-node storage by 50% (ICBC'20*)		
– Built a blockchain-based inventory system for ministries, enabling transparent, auditable tracking of inventory changes		
Graduate Research Assistant	The Pennsylvania State University	Jan 2021 – Present
– Built and evaluated accessibility-oriented systems for blind and low-vision (BLV) interaction; developed real-world computer vision/LMM reliability methods including evaluation, segmentation, targeted unlearning (details in Research Projects section)		

RESEARCH PROJECTS

Accessibility, Systems, and Human-Computer Interaction:

- **Wheeler:** Designed a 3-wheel input device for blind and low-vision (BLV) users with two modes – UI/menu navigation and 2D mouse-like navigation – achieving a **40%** reduction in app hierarchy traversal time (Best Paper HM – **UIST'24***)
- **BLV-Nav-Objects:** Identified **90 key objects** essential for BLV individuals' navigation from 21 videos; refined them through a focus group study, revealing major gaps in prominent vision datasets like *KITTI* and *MS-COCO* [[GitHub](#)] (**ASSETS'24***)
- **SpaceXMag:** Developed a screen-space optimization framework that improves magnifier efficiency for low-vision users, reducing overview and target-finding task times by **28–43%** in user studies [[GitHub](#)] (**IMWUT'23***)
- **Accessibility-Metrics:** Identified navigational complexity as the key usability barrier for blind users; proposed a probabilistic model with three metrics to quantify and improve desktop application accessibility [[GitHub](#)] (**CHI'23***)

Machine Learning and Computer Vision:

- **Object Trajectory Narratives:** Built a distributed 3D scene data pipeline from engine telemetry (no pixels), enabling 7B LLMs to narrate complex motion with GPT-4V-level accuracy at a tiny fraction of the compute (in **ECCV'26*** review)
- **Temporal VOS Loss:** A new loss for video object segmentation that enforces smooth object motion, yielding up to **4%** J&F gains on small, occluded, and reappearing objects across *DAVIS*, *YT-VOS*, and *LVOS* (in **ECCV'26** review)
- **IKIWISI:** Developed an interactive vision-language model evaluation tool using heatmap visualizations to reveal inconsistencies and object-tracking failures—supporting scalable debugging [[GitHub](#)] (Best Paper HM – **DIS'25***)
- **ForenSight:** A local-first video investigation pipeline using **CLIP embeddings + FAISS** for text-to-timestamp retrieval and event-centric playback; supports ROI/line rules, policy tagging, multi-camera correlation, and case export [[GitHub](#)]

Large Language Models and Agentic AI:

- **TeachPilot:** A classroom LLM assistant (Streamlit + Ollama) with instructor-controlled prompts and help levels to promote think-first engagement; **statistically significant** gains in student AI literacy via pre/post study [[GitHub](#)] (in **AIED'26*** review)
- **LLM Unlearning with Synthetic Data:** Built LoRA-based PEFT unlearning to remove behaviors (e.g., bias) via multi-GPU fine-tuning with synthetic data—generated via Meta's synthetic-data-kit using vLLM (Llama-3.3-70B) [[GitHub](#)]

TECHNICAL SKILLS

Programming and Scripting: Python, Java, C/C++, C#, Git, MATLAB, JavaScript, Node.js, Express.js, ReactJS

Systems & Cloud: Linux, Docker, Azure, Apache, Redis, Kafka, REST APIs, MySQL, PostgreSQL, AWS

Machine Learning: PyTorch, TensorFlow, Scikit-Learn, LLM fine-tuning, PEFT, vLLM, LangChain, FAISS, MCP