Jahir Sadik Monon

jahirsadik.github.io ◇ Google Scholar ◇ LinkedIn ◇ jmonon@umass.edu ◇ *Amherst, Massachusetts*

Research Interest

I study resource-bounded reasoning for embodied and multi-agent systems operating under strict compute, memory, and latency constraints. My current research focuses on Vision-Language-Action models, world model-based planning, and hierarchical learning methods for autonomous navigation and multi-agent coordination. This builds on my work in on-device assistive robotics, synthetic perception pipelines for blind travelers, and decentralized multi-agent RL.

Education

University of Massachusetts Amherst — Amherst, Massachusetts
MS/PhD in Computer Science — *Sep 2025 - present (Expected: 05/30)*
GPA: 4.00/4.00 | Advisors: Dr. Shlomo Zilberstein, Dr. Donghyun Kim
Research Focus: *VLAs, world models, hierarchical learning, multi-agent collaboration.*

University of Dhaka — Dhaka, Bangladesh
B.Sc. (Hons) in Computer Science and Engineering | Coursework — *Jan 2019 - Dec 2023*
CGPA: 3.93/4.00 | Class rank: 1/72 (*Highest Faculty Distinction*)
Thesis: *Multi-agent cooperation under sparse rewards via intrinsic rewards.*

Publications

[1] NavAble: A Large-Scale Dataset and Synthetic Data Generation Pipeline for Blind Navigation. H. Hwang*, J.S. Monon*, S. Yang, S.U. Patel, A.N.H. Nguyen, K. Nguyen, K. Garg, D. Gage, D. Hordofaa, A. Anjna, E. Ohn-Bar, D. Kim. *Conf. on Neural Information Processing Systems (NeurIPS), Evaluations and Datasets Track*, 2026. *(*equal contribution)*

[2] GuideNav: User-Informed Development of a Vision-Only Robotic Navigation Assistant for Blind Travelers. H. Hwang, S. Yang, J.S. Monon, N.A. Giudice, S.I. Lee, J. Biswas, D. Kim. *ACM/IEEE Int. Conf. on Human-Robot Interaction (HRI)*, 2026. **[Honorable Mention, 3.6%]**

[3] Learning Heterogeneous Agent Collaboration in Decentralized Multi-Agent Systems via Intrinsic Motivation. J.S. Monon, D.D. Barua, M.M. Khan. *Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS)*, 2025.

Preprints

[1] BAPPA: Benchmarking Agents, Plans, and Pipelines for Automated Text-to-SQL Generation. F. Ahmed, M.M. Ahasan, J.S. Monon, M. Wahed, M.A. Amin, A.K.M.M. Rahman, A.A. Ali. *arXiv preprint*, 2025.

Open-source releases: NavAble dataset and generation pipeline (HuggingFace), GuideData interview and observation corpus (Kaggle, CC0), CoHet implementation (GitHub), Walkability Dataset (Kaggle).

Research Experience

Resource-Bounded Reasoning Research Group | RBR Lab — *Sep 2026 - present*
Graduate Research Assistant — Amherst, MA

- Developing VLA-based control for autonomous navigation, studying hierarchical learning methods, and world model-based planning in collaborative multi-agent settings, mentored by Saaduddin Mahmud.
- Built IsaacSim simulation environments to evaluate VLA memory strategies for long-horizon navigation, in a joint project with the DARoS Lab on resource-efficient communication among small VLAs.

Dynamic and Autonomous Robotic Systems Lab | DARoS Lab — *Sep 2025 - present*
Graduate Research Assistant — Amherst, MA

- Co-developed camera-only and RL-based navigation on onboard Jetson compute for quadruped guide robots (Go2) over 2 km routes, a large-scale segmentation dataset and synthetic pipeline for blind navigation benchmarked on foundation models (e.g., SAM 3), and VLA-based control of a 7-DoF arm.

Center for Computational & Data Sciences, IUB | CCDS *Feb 2024 - Jun 2025*
Research Assistant Dhaka, Bangladesh

- Studied VLM-based agent-controllable representations via multi-step inverse models for principled offline RL with rich exogenous information – advised by Dr. Riashat Islam from Microsoft Research.
- Designed multi-agent LLM collaboration frameworks, and studied multimodal reasoning – advised by Dr. Amin Ahsan Ali and Dr. AKM Mahbubur Rahman – in collaboration with Muntasir Wahed.

Cognitive Agents and Interaction Lab, University of Dhaka | CAILab *Jan 2023 - Jan 2024*
Undergraduate Research Assistant Dhaka, Bangladesh

- Investigated multi-agent RL policies in sparse reward environments with heterogeneous agents under the supervision of Dr. Md Mosaddek Khan; organized seminars and workshops on RL and LLMs.

Academic Experience

Teaching

University of Massachusetts Amherst | COMPSCI 403 *Sep 2025 - Dec 2025*
Graduate Teaching Assistant Amherst, Massachusetts

- Supported teaching of *Introduction to Robotics: Mechanics, Dynamics, and Control* through lectures, TA hours, and grading, and designed a Reusable Learning Object on coordinate frames and transformations to build students' spatial visualization skills for robotic manipulation | RLO outcome.

Independent University Bangladesh | Coding for All Initiative *Feb 2024 - Jul 2024*
Lecturer Dhaka, Bangladesh

- Lectured CIS-101 students on basic Python, application development, and introductory AI.

Advising

UMass Amherst | Early Research Scholars Program (ERSP) *Feb 2026 – May 2026*
Research Mentor Amherst, Massachusetts

- Mentored UMass CICS undergrad Keshav Garg on curating an open-source dataset of accessibility-critical objects and benchmarking segmentation models for assistive navigation (NeurIPS E&D 2026).

Honors & Awards

Paul Utgoff Memorial Graduate Scholarship, CICS, UMass Amherst | Article *2025*
Honorable Mention (Systems Track), HRI | Award | Top 3.6% of accepted papers *2026*
Dean's Honor Award, University of Dhaka | Highest Faculty Distinction | Article *2025*
University of Dhaka Bachelor's Merit Scholarship *2025*
National Science and Technology Fellowship Bangladesh | 11th out of 1,260 applicants *2025*
Hult Prize Impact Summits | Campus Champion & South Asia Regional Finalist *2021*

Selected Projects

A Study on Dhaka City's Walkability | Research Project | Kaggle Dataset *2022*
Led a 70-person volunteer team to crowdsource a dataset capturing subjective walkability metrics across different suburbs of Dhaka city via Gaia GPS; performed data cleaning, visualization, and analysis on the data.

Academic Service

Peer Review HRI'27, AAAI'27 Workshop (Embodied AI), AAMAS'25 (Journal Track), ICIP'24, ICPR'24
Workshops CSEDU, CCDS *(2024)*

Technical Skills

Languages & Libraries Python, PyTorch, C, SQL, NumPy, Pandas, Matplotlib, Linux, Git, Weights & Biases
Robotics & On-Device NVIDIA Jetson, IsaacSim, IsaacLab, Genesis, Docker, Quadrupeds & 7-DoF Arm
ML & Embodied AI Vision-Language-Action (VLA) Models, VLMs/LLMs, Multi-Agent & Offline RL