MD Sameer Iqbal Chowdhury

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RESEARCH INTEREST

Vision-Language Models (VLMs), Robotic Manipulation, Autonomous Navigation and Exploration

ACADEMIC PROFILE

Texas State University — Aug 2025 – Present
Ph.D. in Computer Science (CGPA: 3.50/4.00) (9 credits completed) — *San Marcos, TX*
Advisor: Dr. Tsz-Chiu Au

University of Dhaka — Jan 2019 – Mar 2024
B.Sc. in Robotics and Mechatronics Engineering (CGPA: 3.36/4.00) — *Dhaka, Bangladesh*
Thesis: Design of an IoT-enabled Scalable Closed Hydroponics System with Smart Parameter Control

RESEARCH EXPERIENCE

Graduate Research Assistant — Aug 2025 – Present
Texas State University (Advisor: Dr. Tsz-Chiu Au) — *San Marcos, TX*

- Exploring VLM utility in robotics by benchmarking diverse architectures, from edge-deployable solutions like Moondream2 and SmolVLM to complex reasoning engines like Qwen-2-VL 7B and Florence-2.
- Researching failure modes in VLM-based manipulation, implementing detection mechanisms to improve error recovery and reliability in autonomous systems.

Research Assistant — Dec 2023 – Jul 2025
University of Dhaka (Supervisor: Dr. Sejuti Rahman) — *Dhaka, Bangladesh*

- Conducted multimodal data collection sessions (video, audio, eye tracking) with 90+ subjects across multiple institutions for depression detection research, ensuring IRB compliance.
- Managed and curated dataset from individuals diagnosed with Major Depressive Disorder and perinatal mothers with maternal depression, completing one scientific manuscript.

Research Assistant — Jan 2023 – Jan 2024
University of Dhaka (Supervisor: Dr. Lafifa Jamal) — *Dhaka, Bangladesh*

- Designed and implemented IoT-enabled automated hydroponics system achieving 78-288% improvement in fresh mass yield compared to conventional techniques.
- Developed novel algorithm for persistent sensing error resilience, reducing erroneous actuations in microcontroller-based systems.

PUBLICATIONS

C=Conference, J=Journal, S=In Submission/Preprint

[J.1] **MD Sameer Iqbal Chowdhury** and Tsz-Chiu Au. (2026). Assessing Vision-Language Models for Failure Detection in Robotic Manipulation. In *IEEE Pulse*. IEEE. DOI: 10.1109/MPULS.2026.3659245 (In Press)

[S.1] **MD Sameer Iqbal Chowdhury**, Mikdam-Al-Maad Ronoue, Md Asaduzzaman, and Lafifa Jamal. (2024). Design of an IoT-enabled Scalable Closed Hydroponics System with Intelligent Parameter Control and Persistent Sensing Error Resilience. In *Smart Agricultural Technology* (Under Review). DOI: 10.2139/ssrn.5011949

[C.1] Ipshita Ahmed Moon, Humayra Rashid, Safayat Hasan, **MD Sameer Iqbal Chowdhury**, Shifat-E-Arman, and Lafifa Jamal. (2024). Exploring the Efficacy of NAO Robot as a Language Instructor. In *Proceedings of the 10th International Conference on Robotics and Artificial Intelligence (ICRAI 24)*. ACM. DOI: 10.1145/3728985.3729006 (Equal contribution).

TECHNICAL SKILLS AND STRENGTHS

Languages	Python, C/C++, MATLAB
Frameworks	PyTorch, TensorFlow, YOLO, ROS/ROS2
Hardware	NVIDIA Jetson, Arduino, Raspberry Pi, Sensors/Actuators
Design & Tools	Git, Docker, LaTeX, SolidWorks

TEACHING EXPERIENCE

Doctoral Instructional Assistant Aug 2025 – Present
Texas State University *San Marcos, TX*

- Serving as a Teaching Assistant for CS2308 (Foundations of Computer Science II) under Dr. Jill M. Seaman and Dr. David L. Patrick.
- Curating and grading assignments, proctoring examinations, and providing office hour support for **two course sections**, overseeing a combined cohort of 140+ students.

LEADERSHIP EXPERIENCE

Chair Jan 2023 – Apr 2024
IEEE Robotics & Automation Society, University of Dhaka Student Branch Chapter *Dhaka, Bangladesh*

- Organized 10+ workshops, interactive sessions, and industry expert experience-sharing events for 200+ students.
- Spearheaded technical training programs on Arduino, ROS, and computer vision for undergraduate students.

Mentor Sep 2019 – Sep 2022
Bangladesh Robot Olympiad (BdRO) *Nationwide, Bangladesh*

- Conducted robotics workshops in 15+ high schools nationwide, developing engaging curriculum for 500+ students.
- Volunteered to organize national rounds of the 2nd to 5th editions, coordinating logistics for 1000+ participants.

RESEARCH GRANTS

- **Design of an IoT-enabled Scalable Closed Hydroponics System with Smart Parameter Control**: ICT Innovation Fund Grant (2023–2024), Ministry of Posts, Telecommunications and Information Technology, Bangladesh. **Role:** Co-Principal Investigator (Co-PI). **Amount:** BDT 400,000 (∼$3,670 USD at 1 USD = 109 BDT in July 2023). Project ID: 1280101-120008431-3631108.

HONORS AND AWARDS

- **Best Poster Award (Presentation):** "Assessing Vision-Language Models for Failure Detection in Robotic Manipulation", 2nd Annual IEEE LSS EMB Workshop on AI and Healthcare, IEEE Lone Star Section EMBS Chapter, USA, 2025.
- **2nd Place:** Texas State University Capture The Flag (CTF), conducted by EC-Council, 2025.
- **Highest Mark in Country:** Economics, Cambridge Assessment International Examinations (CAIE) (AS Level), 2018.
- **The Daily Star Award:** Awarded for outstanding performance in A Level (2019) and O Level (2017) examinations under Cambridge Assessment International Examinations (CAIE).