

Arghya Chatterjee

PhD Student, Intelligent Systems and Robotics
Pensacola, Florida, USA

[Website](#) | [LinkedIn](#) | [Google Scholar](#) | [Github](#) | [YouTube](#) | [Email](#)

EDUCATION

University of West Florida (UWF), Florida, US 2022 - 2027 (*Exp.*)
PhD candidate in *Intelligent Systems and Robotics* 3.71/4.00
Thesis Title: *Scene Understanding and Object Interaction with Humanoids*
Supervisor: Dr. Robert Griffin

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh 2015 - 2019
Bachelor of Science in *Mechanical Engineering* 3.14/4.00
Thesis Title: *Computational Investigation on Pool Boiling IR Images with Neural Networks*
Supervisor: Dr. Maglub Al Nur & Dr. Muhammad Abir

PROFESSIONAL EXPERIENCE

Lotus Robotics October 2021 - June 2022
Robotics Engineer Newyork, USA

- Built autonomous UGVs for GPS-guided delivery missions.
- Developed UGVs for autonomous warehouse patrol, mowing, and floor cleaning.
- Created Autonomy Stack with ROS/ROS2 for Navigation and Control of UGVs.

Bangladesh Astronomy Research Collaboration (BARC) January 2020 - July 2022
Advisor & Fellow Member Dhaka, Bangladesh

- Advised on research strategy & organizational operations.
- Grew Bangladesh's astronomy community through research, outreach, and observation.
- Instructed workshops on Astro-Science and Astro-Tech at Science Festivals and Astrovation 1.0.

Youthpreneur Network June 2019 - June 2020
Head of STEM Education & Development Dhaka, Bangladesh

- Led STEM projects, workshops, olympiads (e.g. National Space Carnival).
- Organized programs across schools and universities in Bangladesh.
- Instructed workshops on Space Technology and expanded STEM participation throughout Bangladesh.

TEACHING EXPERIENCE

BUET Mars Rover Robotics Team October 2020 - September 2021
Teaching Assistant & Mentor Dhaka, Bangladesh

- Mentored students of different developer boards (e.g Jetson) and running ROS/ROS2 frameworks on them.
- Mentored students about ERC onsite and remote simulation tasks at Mars Rover Lab (MRL), BUET.

Kibo Astrobee Robot Programming Challenge January 2020 - June 2021
Educator & Instructor Dhaka, Bangladesh

- Instructor for Bangladesh teams and created tutorials on Astrobees for autonomous navigation inside ISS.
- Mentored teams through successful submissions at STEMX 365, earning the Outstanding Educator Award.

Bangladesh Astronomical Society (BAS)

Instructor & Organizer

March 2017 - April 2019

Dhaka, Bangladesh

- Instructed workshops on Astronomy at Abdul Jabbar Astronomy Kormoshala.
- Organized workshops and Space Observation Camps on Special Occasions (e.g. World Space Week).

RESEARCH & PROJECT EXPERIENCE

Graduate Research Assistant, IHMC

PhD. Thesis in Humanoid Perception

PhD Advisor: Dr. Robert Griffin (IHMC)

Aug 2022 – Present

Florida, USA

- Working on scene graphs for hierarchical TAMP and object pose estimation for local pose refinement.
- Implementing model-based AT-driven, and model-free learning driven methods for humanoid manipulation.
- Implementation will ensure building search, patrol & bomb disposal with ONR SquadBot & NASA Valkyrie.

Visiting Student Researcher, NASA JPL

DARPA organized RACER Challenge

Mentor : Dr. Shehryar Khattak (NASA JPL)

May 2023 – September 2023

California, USA

- Developed perception algorithms for off-road autonomy on Polaris vehicle for DARPA's RACER program.
- Algorithms will be used for navigation in unstructured terrain for terrestrial and planetary exploration.
- Implementation will enable autonomous supply delivery with LTVs on Moon without human control.

Advisor & Robotics Engineer, Lotus Robotics

Research Engineer for ROS-based Autonomous Robotics Projects

Project Coordinator: Mansurul Haque (Lotus Robotics)

October 2021 – June 2022

New York, USA

- Implemented control algorithms for 4-wheeled UGV platforms (Ackermann & Differential Drive).
- Built GPS-guided waypoint based autonomous food delivery missions with UGVs.
- Developed autonomous waypoint-guided UGVs for warehouse security, lawn mowing, and floor scrubbing.

Collaborator & Team Member, Team CoSTAR of NASA JPL

DARPA organized SubT Challenge

Mentor: Dr. Benjamin Morrell (NASA JPL) & Prof. Luca Carlone (MIT LIDS)

July 2020 – January 2022

California, USA

- Contributed to NASA JPL Team CoSTAR's NeBula autonomy for DARPA SubT.
- Built single and multi-robot SLAM, Object Detection & Localization system for search and rescue.
- Deployed on Spot, Husky, UAVs, and roller-copters with multi-sensor payloads.

Team Supervisor & Educator, STEMX 365

JAXA organized Kibo-Astrobees ISS Robot Programming Challenge

Project Coordinator: Mizanul H. Chowdhury (MIT Space Systems Lab)

January 2020 – June 2021

Tokyo, Japan

- Built autonomy stack for Astrobees inside simulated ISS for waypoint navigation avoiding obstacles.
- Implemented visual fiducial detection (QR/AR tags) for robust marker localization and task execution.

Autonomy Team Lead, Team Interplanetary, BUET

ESA organized ERC & Mars Society organized URC

Supervisor: Dr. Md. Ashiqur Rahman (BUET ME)

June 2017 – September 2019

Dhaka, Bangladesh

- Developed waypoint-guided autonomous Mars rover for Bangladesh ICT Ministry funded project.
- Built GPS-based navigation for the University Rover Challenge (URC).

- Implemented waypoint and AR-tag navigation for the European Rover Challenge (ERC).

Researcher & Collaborator, ME, BUET

Mar 2018 – Apr 2019

Undergraduate Thesis

Dhaka, Bangladesh

Supervisors: Dr. Maglub Al Nur (BUET ME) and Dr. Muhammad Abir (MIT Nuclear Lab)

- Analyzed pool-boiling IR images of MIT Nuclear Lab to automatically segment dry spots using CNNs.
- Benchmarked traditional image processing vs. U-Net for dry-area quantification.

Team Leader, Team Octatron, BUET

Mar 2017 - Feb 2018

Undergraduate Project

Dhaka, Bangladesh

Supervisors: Dr. M.A. Rashid Sarkar and Musanna Galib (BUET ME)

- Built a fire-fighting octocopter for extinguishing fire in affected buildings and areas.
- Developed a flood-relief distributor octocopter to deliver supplies to flood-affected zones.

Researcher & Technical Leader, Team Out of the Box

Jan 2017 - May 2017

Microsoft BD Internship Project

Dhaka, Bangladesh

Supervisors: Sonia B. Kabir and Ashikur Rahman (Microsoft)

- Developed a mobile app for early screening of specific childhood disabilities.
- Used Microsoft Azure (cloud backend) and Bing Maps (location services) for nearest treatment suggestion.

Team Leader, Team Igniters, BUET

March 2016 - March 2017

Undergraduate Project

Dhaka, Bangladesh

Supervisors: Dr. M.A. Rashid Sarkar (BUET ME) and Dr. A.B.M. Alim Al Islam (BUET CSE)

- Built a low-cost, hand-worn navigation device for blind people using ultrasonic sensors.
- Implemented distance-proportional haptic feedback so vibration intensity increases as obstacles get closer.

RESEARCH GRANT

NASA Small Business Innovation Research (SBIR)

August 2023 - July 2024

Boardwalk Robotics & IHMC

Florida, USA

- **Topic:** Sensing & Perception Software for Autonomous Manipulation & Utilization Tasks in Space.
- **Description:** Moon-to-Mars objectives highlight the need to develop and demonstrate robotic and autonomous systems capable of supporting sustained operations on the lunar surface, in lunar orbit, and eventually on Mars. To achieve the goals of maximum science return and an expanded and sustainable exploration infrastructure, robotic and autonomous systems must be capable of efficient and effective interaction with their in-space environment.
- **Solution Proposed:** Handler: An End-to-End Tool for Semantic-based Manipulation using Affordance Templates using NASA Valkyrie Humanoid Platform for Space Application.

HONORS & AWARDS

5th Worldwide in Final Round of DARPA SubT Challenge

September 2021

Awarded to Team CoSTAR of NASA JPL for competing in the final round

Kentucky, USA

Special Grant from ICT Division (Ministry) of Bangladesh

February 2020

Awarded to BUET Mars Rover Lab (MRL) for outstanding performance in robotics

Dhaka, BD

Gold Medalist from Duke of Edinburgh International Foundation

December 2019

Awarded for Outstanding Extra-curricular & Service to the Society

London, UK

2nd in Asia & 16th Internationally in European Mars Rover Challenge

September 2019

Organized by European Space Foundation (ESF) & European Space Agency (ESA)

Kielce, Poland

Special Fund & Grant from BUET Alumni Association Trust Awarded to Team Interplanetar of BUET MRL for competition & robotics research	<i>July 2019</i> Dhaka, BD
Finalist in IEEE SS12 International Project Competition & Maker Fair Organized at SS12: Age of Innovation and Maker Fair 2017	<i>July 2017</i> Hyderabad, India
1st in National Project Show Competition (Senior Category) Organized at EEE Day, BUET	<i>May 2017</i> Dhaka, BD
3rd in Inter University Project Show Competition Organized at Mechanical Festival, BUET	<i>April 2017</i> Dhaka, BD
1st in National Poster Presentation Competition Organized at Robolution, MIST	<i>March 2017</i> Dhaka, BD
2nd in Inter University Project Show Competition Organized at CSE Day, BUET	<i>November 2016</i> Dhaka, BD
Govt. Merit Scholarship from Education Board of Bangladesh Primary to Higher Secondary	<i>2006 - 2019</i> Khulna, BD

INTERNSHIPS & TRAININGS

NASA Jet Propulsion Laboratory (JPL) Internship Project: Robustifying Perception Pipeline for DARPA RACER Vehicles	<i>May 2023 – September 2023</i> California, USA
Khulna Power Company Limited Training: Power Plant Visit & Industrial Attachment (3 weeks)	<i>October 2018 – October 2018</i> Khulna, Bangladesh
Microsoft Bangladesh Limited Internship Project: Disabling Disability through Microsoft Products	<i>January 2017 - May 2017</i> Dhaka, Bangladesh

SKILLS

Spoken Languages:	English, Bangla & Hindi
Programming Languages:	Python, C++, Java, Arduino, JavaScript, HTML, CSS & LATEX
DevOps & Collaboration:	Hugging Face, Git, GitHub, GitLab, Docker & MS Office Family
Simulation & 3D Modeling:	Isaac Sim, MuJoCo, Gazebo, SCS, AirSim, Carla, Unity, UE4, Blender, SW
Vision & Media:	Open3D, Trimesh, PyVista, MeshLab, CloudCompare, Adobe PS, Inkscape & Kdenlive
Framework & Library:	Isaac Family, ROS2, OpenCV, PCL, Nerfstudio, TF, PyTorch, CUDA & OpenGL
Operating System:	Linux, Mac, Windows & Android
IDE & Compiler:	VS Code, IntelliJ IDEA, Jupiter Notebook, MATLAB & Android Studio
Dev Boards:	Jetson, Intel NUC, Raspberry Pi, Arduino Family, Pixhawk(PX4) & ArduCopter(ArduPilot)
Robots:	IHMC humanoids, NASA Valkyrie, Utr. H1, Spot, Polaris, Husky, JetHexa, Crazyflie, Mars Rover
Sim Robots:	LeRobot, Astrobe, ANYmal, BD Atlas, Leo Rover, Syropod, UR5, UAV, USV & ROV
Cloud & Web Dev:	AWS S3 (static hosting), CloudFront (CDN), EC2 & WordPress
LLM/VLM Skills:	Prompt Eng., Github Copilot, API Int. (OpenAI/Gemini/Claude/Grok/Perplexity)
LLM Apps:	RAG & Agents (LangChain, LlamaIndex, LangGraph) & UI (Gradio)
Gen AI Tools:	Image(Midjourney, Stable Diffusion, DALL-E)& AV(Runway, Sora, Veo, Luma, ElevenLab)

LEADERSHIPS

Head of STEM Education & Development	Youthpreneur Network
Software Team Lead	Team Interplanetar, BUET
Technical Lead of Internship Project	Microsoft BD
President (Senior Rover Mate)	BUET Rover Scout Group

MEMBERSHIPS

- Organizations
 - Institute of Electrical and Electronics Engineers (IEEE) March 2017 – Present
 - Association for Computing Machinery (ACM) August 2025 – Present
 - American Physical Society (APS) March 2018 – March 2019
 - American Astronomical Society (AAS) May 2018 – April 2020
 - Engineering Students Association of Bangladesh (ESAB) October 2018 – April 2019
- Clubs
 - UWF Robotics Club August 2022 – Present
 - BUET Satyen Bose Science Club September 2016 – April 2019
 - BUET Rover Scout Group February 2015 – April 2019

PUBLICATIONS

Duncan Calvert, Luigi Penco, Dexton Anderson, Tomasz Bialek, **Arghya Chatterjee**, Bhavyansh Mishra, Geoffrey Clark, Sylvain Bertrand, Robert Griffin, *A behavior architecture for fast humanoid robot door traversals*, Robotics and Autonomous Systems, Elsevier, 2025. Accepted [\[Link\]](#).

Benjamin Morrell, Kyohei Otsu, Ali Agha, David D Fan, Sung-Kyun Kim, Muhammad Fadhil Ginting, Xianmei Lei, Jeffrey Edlund, Seyed Fakoorian, ..., **Arghya Chatterjee**, ..., Nhut T Ho, Mykel Kochenderfer, Giovanni Beltrame, George Nikolakopoulos, David Shim, Luca Carlone, Joel Burdick, *An addendum to nebula: Towards extending team costar's solution to larger scale environments*, IEEE Transactions on Field Robotics (T-FR), 2024 [\[Link\]](#).

Kamak Ebadi, Lukas Bernreiter, Harel Biggie, Gavin Catt, Yun Chang, **Arghya Chatterjee**, Christopher E Denniston, Simon-Pierre Deschênes, Kyle Harlow, Shehryar Khattak, Lucas Nogueira, Matteo Palieri, Pavel Petráček, Matěj Petrлік, Andrzej Reinke, Vít Krátký, Shibo Zhao, Ali-Akbar Agha-Mohammadi, Kostas Alexis, Christoffer Heckman, Kasra Khosoussi, Navinda Kottege, Benjamin Morrell, Marco Hutter, Fred Pauling, François Pomerleau, Martin Saska, Sebastian Scherer, Roland Siegwart, Jason L Williams, Luca Carlone, *Present and future of slam in extreme environments: The darpa sub challenge*, IEEE Transactions on Robotics (T-RO), 2023 [\[Link\]](#).

Yun Chang, Kamak Ebadi, Christopher E Denniston, Muhammad Fadhil Ginting, Antoni Rosinol, Andrzej Reinke, Matteo Palieri, Jingnan Shi, **Arghya Chatterjee**, Benjamin Morrell, Ali-akbar Agha-mohammadi, Luca Carlone, *LAMP 2.0: A robust multi-robot SLAM system for operation in challenging large-scale underground environments*, IEEE Robotics and Automation Letters (RA-L), 2022 [\[Link\]](#).

Matteo Palieri, Benjamin Morrell, Abhishek Thakur, Kamak Ebadi, Jeremy Nash, **Arghya Chatterjee**, Christoforos Kanellakis, Luca Carlone, Cataldo Guaragnella, Ali-akbar Agha-Mohammadi, *Locus: A multi-sensor lidar-centric solution for high-precision odometry and 3d mapping in real-time*, IEEE Robotics and Automation Letters (RA-L), 2020 [\[Link\]](#).

Arghya Chatterjee, *Computational Investigation on Pool Boiling IR Images for Segmentation of Dry Spots Automatically and Evaluating the Performance of Traditional Image Processing and Deep Neural Networks in Quantifying Dry Area Segments*, BSc. Thesis, BUET, 2019 [\[Link\]](#).

Arghya Chatterjee, Musanna Galib, MA Rashid Sarkar, *Application of Arduino in designing modern electromechanical laboratory*, IEEE International Conference on Power, Control, Signals and Instrumentation Engineering (ICPCSI), 2017 [\[Link\]](#).

Arghya Chatterjee, Shantanu Dutta, Porag Sarker, Dr. A.B.M. Alim Al Islam, *Obstacle Detector for Blind People with Low Cost (Poster Presentation)*, Proceedings of 2017 International Conference on Networking, Systems and Security (NSysS), 2017 [\[Link\]](#).