

ARGHYA CHATTERJEE



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A machine learning researcher experienced in applying deep learning, edge & cloud computing in computer vision, practical robotics & systems engineering application, and data-driven modern astronomy in order to serve the world, and encourage collaborative endeavor to explore outer world for better future of mankind.

EDUCATION

- **Bangladesh University of Engineering and Technology, Dhaka, Bangladesh**
Degree: BSc. in Mechanical Engineering Feb 2015 - Sept 2019
CGPA: 3.14/4.00
- **Khulna Public College, Khulna, Bangladesh**
Degree: HSC in Science Jul 2012 - Aug 2014
GPA: 5.00/5.00
Class Position: 1st/60
- **Khulna Bidyut Kendra Secondary School, Khulna, Bangladesh**
Degree: SSC in Science Jan 2010 - May 2012
GPA: 5.00/5.00
Class Position: 1st/60

RESEARCH & PROJECT EXPERIENCE

- **Team Supervisor & Educator, BUET**
JAXA Kibo-Astrobee ISS Robot Programming Challenge Jan 2020 – Present
Project Supervisor: Mizanul H. Chowdhury Dhaka, Bangladesh
Topic: Main challenge is to create a program to operate Astrobee (A free flying robot) inside ISS, navigate autonomously avoiding obstacles & stop leakage done by asteroids.
- **Graduate Research Assistant at Model & Project Lab, BUET**
Software Team Advisor (& Ex. Lead) of Interplanetary for URC & ERC Sep 2019 – Present
Supervisor: Dr. Md. Ashiqur Rahman Dhaka, Bangladesh
Topic: Autonomous Navigation Based on GPS, SLAM, AR Tag and Object Detection for Safe Exploration of Rovers on Rough Terrains, Caves and Mineral Ores of Earth and Mars.
- **Researcher & Collaborator**
Undergraduate Thesis Mar 2018 – Apr 2019
Supervisors: Dr. Maglub Al Nur and Dr. Muhammad Abir Dhaka, Bangladesh
Topic: Computational Investigation on Pool Boiling IR Images for Segmentation of Dry Spots Automatically and Evaluating Performance of Traditional Image Processing and Deep Neural Networks in Quantifying Dry Area Segments.
- **Researcher & Team Leader**
Undergraduate Project Mar 2017 - Feb 2018
Supervisors: Dr. M.A. Rashid Sarkar and Musanna Galib Dhaka, Bangladesh
Topic: Fire and Flood Fighter Octocopter (UAV) for Extinguishing Fire in Fire Affected Buildings and Areas, and Distributing Flood Reliefs to people in Flood Affected Zones.
- **Researcher & Technical Lead**
Microsoft BD Internship Project Feb 2017 - May 2017
Supervisors: Sonia B. Kabir and Ashikur Rahman Dhaka, Bangladesh
Topic: Earlier Screening of Particular Disability in Children Through Mobile Application Using Microsoft Products like Azure Cloud Platform and Bing Maps Server.

- **Researcher & Team Leader**
Undergraduate Project Jul 2016 - Feb 2017
Supervisors: Dr. M.A. Rashid Sarkar and Dr. A. B. M. Alim Al Islam Dhaka, Bangladesh
Topic: Hand Wearable Solar Powered Obstacle Detection and Safe Navigation Device for Blind People in Low Cost.

TEACHING EXPERIENCE

- **JAXA Kibo-Astrobee ISS Robot Programming Challenge** Jan 2020 - Present
Instructor for Teams from BUET Dhaka, Bangladesh
- **BUET Mars Rover Robotics Team** Sep 2019 - Present
Instructor at Model & Project Lab (Mars Rover Lab), BUET Dhaka, Bangladesh
- **National Space Carnival & Camp** Sep 2019 - Present
Instructor & Academic Coordinator for Workshops & Camps Dhaka, Bangladesh
- **Bangladesh Astronomical Society** Jan 2017 – May 2019
Instructor for Workshops & Seminars Dhaka, Bangladesh

PROFESSIONAL EXPERIENCE

- **Bangladesh Astronomy Research Center (BARC)** Feb 2020 – Present
Advisor & Member Dhaka, Bangladesh
Activities: Give advice on research activities & how the organization should operate.
- **Youthpreneur Network** (A Social Welfare Organization) Jun 2019 – Present
Head of STEM Education & Development Dhaka, Bangladesh
Activities: Instructed, Organized and Lead Projects, Workshops, Olympiads and Camps in Educational Institutions to Promote STEM Education in Bangladesh.
- **American Astronomical Society** Jan 2018 – Present
Country Coordinator & Member Dhaka, Bangladesh
Activities: Celebrated International Astronomical Events in Bangladesh in accordance with AAS, and Reported to Proper Authority for Publishing on their Monthly Magazines.

PUBLICATIONS

- **A. Chatterjee**, M. Galib and M. A. R. Sarkar, "Application of Arduino in designing modern electromechanical laboratory," 2017 IEEE International Conference on Power, Control, Signals and Instrumentation Engineering (ICPCSI), Chennai, 2017, pp. 222-225.
- **A. Chatterjee**, S. Dutta, P. Sarkar and A. B. M. A. A. Islam, "Obstacle Detector for Blind People with Low Cost (Poster Presentation)," *Proceedings of 2017 International Conference on Networking, Systems and Security (NSysS)*, Dhaka, 2017.

INTERSHIPS & TRAININGS

- **Microsoft Bangladesh** Feb 2017 - May 2017
Internship Project: Disabling Disability through Microsoft Products Dhaka, Bangladesh
- **Khulna Power Company Limited** Oct 2018 – Oct 2018
Training: Power Plant Visit & Industrial Attachment (3 weeks) Khulna, Bangladesh

SKILL SETS

- **Prg. Language:** Python, C++, C#, C, R, Arduino, Java, Java S, HTML, PHP, CSS, & L^AT_EX.

- **Framework & OS:** ROS, OpenCV, PCL, Nvidia Isaac SDK, Keras, TensorFlow, PyTorch, Caffe, CUDA, OpenGL, Kubernetes, .NET, Django, Linux, Mac, Windows & Android.
- **Software & Tool:** Git & GitHub, Docker, MIPAR, Solidworks, Ansys, PLC, Blender, Unity & UE 4, Verge3D, Carla Simulator, Microsoft Airsim, OpenPose3D, Meshroom, Meshlab, CloudCompare, OpenDroneMap, OpenSpace, Photoshop, Kdenlive & MS Office Family.
- **IDE, Compiler & Text Editor:** CodeBlocks, Microsoft Visual Studio, MATLAB, Atom, Jupiter Notebook, PyCharm, Android Studio, Nodejs, IntelliJ IDEA, VS Code & Notepad++.
- **Cloud Platform:** AWS Compute, AWS RoboMaker & Storage, GCP, Google Colab.
- **Hardware:** GPS, LIDAR, 3D Stereo Camera, Nvidia Jetson Boards, Raspberry PI, PX4, Ardupilot, VESC, BLDC motor, Arduino & Nvidia AMD Boards with GTX & RTX Graphics.
- **Technology:** Computer Vision, Image Proc., ML, DCNN, DRL, Object Detection & Recognition, Image Segmentation, Pose Tracking, SLAM, Photogrammetry, 3D Printing, AR, VR & MR, Game Dev, Web Dev, Video Editing, GPU, Edge & Cloud Computing.
- **Language:** Bangla, English & Hindi.
- **Others:** Astronomy, Creative Arts, Singing, Harmonium & Guitar Playing, Organizing, Show Hosting, Volunteering, Swimming, Cycling, Playing Cricket, Football & Badminton.

AWARDS, HONORS & SCHOLARSHIPS

- **Gold Medalist from Duke of Edinburgh International Foundation** Dec 2019
Awarded for Outstanding Extra-curricular & Service to the Society London, UK
- **2nd in Asia & 16th Internationally in European Mars Rover Challenge** Sep 2019
European Space Foundation (ESF) & European Space Agency (ESA) Kielce, PL
- **Finalist in IEEE SS12 International Project Competition & Maker Fair** Jul 2017
SS12: Age of Innovation and Maker Fair 2017 Hyderabad, IN
- **1st in National Project Show Competition (Senior Category)** May 2017
EEE Day, BUET Dhaka, BD
- **3rd in Inter University Project Show Competition** Apr 2017
Mechanical Festival, BUET Dhaka, BD
- **1st in National Poster Presentation Competition** Mar 2017
Robolution, MIST Dhaka, BD
- **2nd in Inter University Project Show Competition** Nov 2016
CSE Day, BUET Dhaka, BD
- **1st in All Classes in Primary, Junior, Secondary & H. Secondary** 2002-2014
Elizabeth Primary Sc., Khulna BKS Sc., Khulna Pub. Cl. Khulna, BD
- **Govt. Board Scholarship in Primary, Junior, Secondary & H. Secondary** 2006-2014
Education Board of Bangladesh Govt., Jessore Khulna, BD
- **Olympiad Achievements:**
 - 1st in Reg. R. of Science Olympiad'14
 - 1st in Reg. R. of Zoology Olympiad'14
 - 3rd in Reg. & 10th in Nat. R. of Astro-Olympiad'13
 - 3rd in Reg. R. of Math Olympiad'14

CERTIFICATIONS

- **Deep Learning Specialization** (5 Course) by Deeplearning.ai on Coursera, Sept 2018.
- **Image and Video Processing:** From Mars to Hollywood with a Stop at the Hospital by Duke University on Coursera, Oct 2019.
- **Intro to Satellite Communications** by Institut Mines – Télécom on Coursera, Dec 2019.
- **Wireless Communications for Everybody** by Yonsei University on Coursera, Dec 2019.
- **AstroTech:** The Science and Technology behind Astronomical Discovery by The University of Edinburgh on Coursera, Dec 2019.
- A Short Course on **Nuclear Power Engineering** by Institute of Nuclear Power Engineering, BUET, Apr 2018.

LEADERSHIPS

- **Head** of STEM Education & Development *Youthprenuer Network*
- **Software Team Lead** *Team Interplanetar, BUET*
- **Technical Lead** of Internship Project *Microsoft BD*
- **President** (Senior Rover Mate) *BUET Rover Scout Group*
- **President** *Satyen Bose Science Club, BUET*
- **Team Lead** for Development & Planning *ESAB, BUET Unit*

VOLUNTEERING

- **Sceptre (Poverty Alleviation Organization)**
Activities: Org. free medical camps & distribute dress & sewing machines to poor people.
- **BUET Rover Scout Group**
Activities: Volunteered on alumni day at BUET & org. flood relief distribution camp.
- **Khulna Bidyut Kendra Secondary School Scout Group**
Activities: Volunteered on medical camps, tree plantation events & sports day at KBKSS.

WORKSHOPS & SEMINARS

- **International Youth Leadership Summit-2016** org. by BYLC.
- 4th BIRDS International Workshop on **Demystifying Satellites** org. by BRAC University.
- Seminar on **Zero Robotics** by M.H. Chowdhury of MIT org. by Dept. of Mech. Eng., BUET.
- Seminar on **4-fold Resolution Increase in Endoscopic Imaging** by J.M. Kahn of Stanford University, org. by Dept. of Biomedical Eng., BUET.
- Workshop on **PCB, Graphic Designing & Technical Paper Writing** org. by IEEE BDS.
- Training on **AI for Beginners & Advanced AI with Python** org. by SBS Club, BUET.
- Workshops on **CFD, Ansys Fluent, Solidworks & 3D Printing** org. by Involute Tech BD.

MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (**IEEE**)
- American Astronomical Society (**AAS**)
- American Nuclear Society (**ANS**)
- Bangladesh Astronomical Society (**BAS**)
- Bangladesh Astronomy Research Center (**BARC**)
- Bangladesh Youth Leadership Center Graduate Network (**BGN**)

REFERENCES

- **Dr. M. A. Rashid Sarkar**
Academic Advisor
Ex. Professor, Dept. of Mech. Eng., BUET.
Professor, Dept. of Nuclear Eng., MIST.
Email: rashid@me.buet.ac.bd
- **Dr. Muhammad Abir**
Thesis Co-Supervisor
Ex. Post Doc. R. Associate, Dept. of NSE, MIT.
Imaging Specialist, Phoenix Nuclear Labs.
Email: miabir@mit.edu
- **Dr. Md. Ashiqur Rahman**
Project Supervisor
Professor, Dept. of Mech. Eng., BUET.
Email: ashiquurrahman@me.buet.ac.bd
- **Mizanul H. Chowdhury**
Project Supervisor
Arch. & Admin of ZR, Space Systems Lab, MIT.
Email: mizanul@mit.edu