# **JAHIR UDDIN**

### Graduate Research Assistant, EHOHT University of Nebraska Medical Center

# SUMMARY -

I am a Graduate Research Assistant at the Department of Environmental Health, Occupational Health and Toxicology, currently focusing on "Human Factor Engineering" under the guidance of Dr. Aaron Yoder and Dr. Bethany Lowndes.

#### **RESEARCH INTERESTS**

Deep Learning, Computer Vision, AI, Bio-informatics, UAV, UGV, Robotics, Remote sensing

#### **EDUCATION AND EMPLOYMENT HISTORY** 1

### 1.1 Education

Spring 2022

Fall 2023 -	University of Nebraska-Lincoln
Current	MS Computer Science

- MS, Computer Science
- CGPA: 3.39

#### Summer 2018 -**Brac University**

- B.S., Computer Science
  - · Thesis: Autonomous precision landing of UAV digital twins on moving platforms and river data analytics from UAV imagery
  - Worked under the guidance of Dr. Md. Khalilur Rahman and Dr. Md. Golam Rabiul Alam to develop a UAV Digital Twin, enhancing quadrotor flight stability by simulating real-world dynamics.
  - Increased helipad detection accuracy to 95% by developing and training a deep learning model using UAV-acquired imagery.
  - Achieved precise UAV landing within a 2 cm margin of error by an improved algorithm utilizing ArUco marker and infusing GPS data.

# 1.2 Employment History

Graduate Research Assistant • GRIME LAB	Lincoln, NE
<ul> <li>Project: USGS: Automated Water Segmentation and River Level Detection on Camera Images Using Tra</li> <li>Working under the guidance of Dr. Troy Gilmore to fine-tune the SAM2 model, improving detection accura waterbeds by optimizing parameters and training data.</li> </ul>	nsfer Learning cy for complex
• Designing and implementing a segmentation model, achieving robust performance in general-purpose wate across varied environments.	erbed detection
• Enhancing the reliability of Grime-AI software by conducting comprehensive testing and debugging, resissues to improve functionality.	solving critical
Graduate Research Assistant <ul> <li>Nebraska Intelligent MoBile Unmanned Systems (NIMBUS) Lab</li> </ul>	Lincoln, NE
• Project: NRI: Beaver Encroachment in the Arctic Visualized by Exploratory Robots (BEAVER)	
<ul> <li>Worked under the guidance of Dr. Justin Bradley and Dr. Brittany Duncan to develop a computer valgorithm, achieving precise control of a hanging payload by leveraging advanced motion detection techn</li> <li>Improved real-time localization accuracy to within 5 cm by designing and implementing a webcam-based</li> </ul>	vision tracking iques. vision system.
Graduate Research Assistant D	haka, Bangladesh
Laboratory of Space System Engineering and Technology (LaSSET)	
<ul> <li>Project: Indigenous Mission Payload Design for 2U CubeSat</li> <li>Worked with advisors Abdulla Hil Kafi and Raihana Shams Islam Antara to develop a compact deep-lear CubeSats, enabling efficient onboard image classification using Coral Nano.</li> </ul>	ning model for
<ul> <li>Mentored undergraduate research groups, fostering innovation and ensuring project milestones were achieve</li> <li>Provided technical guidance and mentorship to an undergraduate robotics team, improving their design solving skills to achieve competition readiness.</li> </ul>	ed on schedule. and problem-
DevOps Intern D	haka, Bangladesh
<ul> <li>InsideMaps</li> <li>Enhanced the accuracy and efficiency of a photogrammetry tool, optimizing it for real estate mapping a refining algorithms and workflows.</li> </ul>	applications by
	Graduate Research Assistant         GRIME LAB         Project: USGS: Automated Water Segmentation and River Level Detection on Camera Images Using Tra Working under the guidance of Dr. Troy Gilmore to fine-tune the SAM2 model, improving detection accura waterbeds by optimizing parameters and training data.         Designing and implementing a segmentation model, achieving robust performance in general-purpose wate across varied environments.         Enhancing the reliability of Grime-AI software by conducting comprehensive testing and debugging, resisues to improve functionality.         Graduate Research Assistant         Nebraska Intelligent MoBile Unmanned Systems (NIMBUS) Lab         Project: NRI: Beaver Encroachment in the Arctic Visualized by Exploratory Robots (BEAVER)         Worked under the guidance of Dr. Justin Bradley and Dr. Brittany Duncan to develop a computer valgorithm, achieving precise control of a hanging payload by leveraging advanced motion detection techna         Improved real-time localization accuracy to within 5 cm by designing and implementing a webcam-based         Graduate Research Assistant       D         Laboratory of Space System Engineering and Technology (LaSSET)       Project: Indigenous Mission Payload Design for 2U CubeSat         Worked with advisors Abdulla Hil Kafi and Raihana Shams Islam Antara to develop a compact deep-lear CubeSats, enabling efficient onboard image classification using Coral Nano.       Mentored undergraduate research groups, fostering innovation and ensuring project milestones were achieve         Provided technical guidance and mentorship to an undergraduate

# 1

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- **&** 347 691 5709 **G** github.com/jukomol
  - Lincoln, NE, USA in /in/jukomol

# SKILLS -

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Languages:	Python, Arduino, C++ Java, C, SQL	
Technologies:	PX4, LiDar, Docker, git, Sensor Integration, SDR	
Framework:	Tensorflow, Pytorch, ROS, Django	
Boards:	Arduino Mega, UNO, PRO, NANO, ESP32, RPI, Jetson, HACKRF	
Tools:	Fusion360, Proteus, 3D Printing	

Lincoln, NE, USA

Dhaka, Bangladesh

# 2.1 Publication Records

- Conference Proceedings
- Undergraduate Thesis

### 2.1.1 Conference Proceedings: Peer Reviewed

- C6 Jahir Uddin, Mehedi Hassan, Md. Mahbub Ul Haque, Rehnuma Binta Shahriar, Shad Nur Mim Bidhu, Raihana Shams Islam Antara, Abdulla Hil Kafi, DeepSea Cluster: Detection and Classification of Anthropogenic Ocean Noise Using Satellite Images, IAC 2023, Baku, Azerbaijan. Available on IAF
- C5 Jahir Uddin, Haque Md, Mahbub, Ul, Sahariar Sihab, Wadud MD, Firoz, Shahriar Rehnuma, Binta, Chamon Amanto, Amin, Kafi Abdulla, Hil, Optimizing Autonomous Navigation of Unmanned Ground Vehicles in Challenging Terrain through Surface Analysis and AI, IAC 2023, Baku, Azerbaijan. Available on IAF
- C4 **Jahir Uddin**, Haque Md,Mahbub, Ul, Wadud MD, Firoz, Ahad Muntasir, Sahariar Sihab, Arnab Shams, Fardous, Shahriar Rehnuma, Binta, Rahman Rafi, Musfiq, Kafi Abdulla, Hil, Multi Terrain Drones For End-To-End Ocean Monitoring And Protection, IAC 2023, Baku, Azerbaijan. Available on IAF
- C3 Joy Chironjeet, Das, Wara Tayab, Uddin, Golpa Prapty, Majumder, **Jahir Uddin**, Antara Raihana, Shams, Islam, Kafi Abdulla, Hil, Navigating the Challenges of Inflation and Material Scarcity in Space Programmes, IAC 2023, Baku, Azerbaijan. Available on IAF
- C2 Jahir Uddin, Muntasir Ahad, Abdulla Hil Kafi, Wireless Event Based Kill-switch for Safe & Autonomous UAV Operations, ICEIC 2023, Singapore. Available On IEEE Xplore
- C1 Jahir Uddin, Firoz Wadud, Rezwana Ashrafi, Md. Khalilur Rhaman, Md. Golam Rabiul Alam, Landing with Confidence: The Role of Digital Twin in UAV Precision Landing, 10th International Conference on Recent Advances in Air and Space Technologies (RAST 2023), Istanbul, Turkey. Available on IEEE Xplore

#### 2.1.2 Undergraduate Thesis

T1 Jahir Uddin, Rezwana Ashrafi Rimi, Suhail Haque Rafi, Mashiat Mamun Raidah, Autonomous precision landing of UAV digital twins on moving platforms and river data analytics from UAV imagery, Brac University, Dhaka, Bangladesh. Available on BRACU Dspace

### 2.1.3 Other Publications

- W3 Mojammel Haque Shourobh, **Jahir Uddin**, Md Firoz Wadud, UAVBuzz: Practical Approach To Build UAV (Workshop), IEEE AESS Student Chapter, Brac University, Dhaka, Bangladesh, 2022
- W2 Md Firoz Wadud, **Jahir Uddin**, Hashibul Islam, Challenges of Autonomous Mars Rover (Workshop), Mars Society Bangladesh, Dhaka, Bangladesh, 2021
- W1 Jahir Uddin, Getting Hacked is Easy (Workshop on Cyber Security ), RIGHT, Daffodil International University, Dhaka, Bangladesh, 2020

#### 2.2 Research Projects and Awards

#### • BracU Dichari

**Project Engineering Manager:** Jahir Uddin (April 2022- December 2022) **Awards:** 4th Position and Perseverance Award, European Robotics League, 2022, Poland **Contribution:** 

- Developed UAV from scratch for rescue mission, capable of 5 kg payload
- Integrated on-board deep learning algorithm on a UAV to detect humans in the disaster zone
- Developed EXIF manipulation tool to map the environment efficiently
- Managed Core team of 9 members

#### BracU Mongol Tori

**Technical Team Lead :** Jahir Uddin (June 2021- March 2022) **Awards :** 4th Position, University Rover Challenge, Virtual, Utah, USA 2021 **Contribution:** 

- Developed autonomous traversal algorithm for the Mars Mission
- Achieved Highest Score for Autonomous Mission in URC 2021
- Managed core team of 12 members

- Collected Rock Sampling Dataset
- BracU Kilo-Flight Computer Vision Developer : Jahir Uddin (June 2021- December 2021) Awards : 9th Position, International Rover Design Challenge, Chennai, India 2021 Contribution:
  - Developed deep learning algorithm to classify different terrains
- Enigma Systems

**Team Lead :** Jahir Uddin (August 2021- February 2022) **Awards :** Global Finalist, Earth Observation Dashboard Hackathon, USA 2021 **Contribution:** 

- Developed AQI Dashboard using Tableau, helps users to easily find out the AQI of a specific region
- BracU Scrutineer

**Robot Programmer:** Jahir Uddin (August 2021- February 2022) **Awards :** 4th, Kibo Robot Programming Challenge, Bangladesh, 2021 **Contribution:** 

- Developed autonomous traversal algorithm to precisely move the Astrobee in ISS(International Space Station).
- Calculator Game

**Programmer:** Jahir Uddin **Awards :** National Champion, 3rd ACC National Science Festival, Dhaka, Bangladesh, 2016 **Contribution:** 

- Developed Ping Pong and Tetris games for TI84 calculator, written in Pure C

#### 2.3 Significant Publicity and Media Appearances

#### 2.3.1 NewsPaper

- BracU Dichari: A Bangladeshi robotics team on the world stage The Business Standard (8th May, 2022)
- BracU Dichari Achieved Perseverance Award The Prothom Alo (16th July, 2022)

#### 2.3.2 Television

- Ekhon Joubon Jar NTV (7th June, 2022)
- The story behind the success was different! News24 (November, 2022)
- How the local drone and robot will conduct rescue operations in the air and on land Prothom Alo (26th July, 2022)

# **3** SERVICE AND OTHER ACCOMPLISHMENTS

#### 3.1 Scholarships

- Talentpool Scholarship, Secondary School Certificate Examination, Comilla Education Board (2015)
- Talentpool Scholarship, Junior School Certificate Examination, Comilla Education Board (2013)
- General Grade Scholarship, Primary School Certificate Examination, Comilla Education Board (2009)

#### 3.2 College Service

- Best Contributor Award (2017) Neutrino ACC Science Club
- Neutrino ACC Science Club, Vice President (2016-2017), Adamjee Cantonment College

#### 3.3 University Service

- IEEE AESS BracU SC, Member, 2021-2023
- Robotics Club of Brac University, Member, 2018-2022