# Nasim Mahmud Mishu

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## EDUCATION

- **North South University** — Dhaka, Bangladesh
  *Bachelor of Science in Computer Science and Engineering* — May 2017 — December 2021
  *CGPA: 3.39/4.00 (87- 89%)*
  **Thesis Title: Autonomous Obstacle Avoiding Exploring Robot (AOAVER)**

## EXPERIENCE

- **Research assistant** — Dhaka, Bangladesh
  *NSU Intelligent Robotics(NIRO) Laboratory* — October 2024 — Present
  *Dept. of Electrical and Computer Engineering, North South University*
  **Research Area:** Swarm robotics with a focus on centralized and decentralized control systems
  **Primary Assignment:** Research on swarm robotics architectures, exploring both centralized and decentralized control strategies. Integrating machine learning techniques to enhance swarm behavior, coordination, and adaptability in dynamic environments.

- **Part-time research assistant** — Dhaka, Bangladesh
  *Dept. of Electrical and Computer Engineering, North South University* — December 2023 — June 2024
  **Research Area:** Resource-efficient visual Deep Reinforcement Learning (DRL) for autonomous agents and robots.
  **Primary Assignment:** Utilize machine learning models and analyze and produce custom datasets for feature extraction. My current work involves determining the best approaches for segmentation-based vision in autonomous agents.

- **Founding member** — Dhaka, Bangladesh
  *NSU Ignite, North South University* — September 2018 — February 2022
  **Primary Assignment:** Participate on the robotics competition, designing and constructing both remote-controlled and autonomous robots.
  **Additional Assignment:** Sharing knowledge through engaging workshops for aspiring enthusiasts.

## SKILLS SUMMARY

- **Programming:** Python, C.
- **Machine Learning:** Outlier Detection, Time Series Forecasting, Information Retrieval, Customer Segmentation, Statistical Learning Models, Recommendation Engines.
- **Data Science:** Data Manipulation, Data Visualization, Interpreting Data, Modeling Data, Testing Hypotheses, Quantitative Analysis.
- **Frameworks:** Pandas, Numpy, Matplotlib, Scikit, Keras.
- **Web & Database:** HTML, CSS, TailwindCSS, MySQL, Relational database.
- **Tools:** MS Office, Anaconda, GIT, Latex.
- **Soft Skills:** Leadership, time management, meeting minutes.

## PROJECTS

- **Autonomous Obstacle Avoiding Exploring Robot - AOAVER** Summer 2021 — Spring 2022

  **Description:** Frequent natural disasters in densely populated Bangladesh pose dangers for human exploration. To aid search and rescue, we developed AOAVER, an autonomous robot that navigates obstacles and explores disaster zones, providing invaluable assistance in hazardous situations.
  **Tech used:** Python, YDLidar X4, Raspberry Pi 3 B+, Arduino UNO, Linux OS, ROS

- **Assist seniors and disabled with hand gesture recognition** Spring, 2020

  **Description:** The goal of this project is to implement a low-cost, easily-affordable, and user-friendly hand gesture recognition system to help the elderly and disabled who are incapable of to move or use voice to communicate. The system will employ a phone-based app that enables users to call for assistance while standing far away by making a hand motion.
  **Tech used:** Python, OpenCV, Raspberry Pi 3 B+, Pi-camera, Firebase, Android Studio

## PUBLICATIONS

**Special Procedding**

- **Understanding the Healthcare Sector in Bangladesh: Experiences and Services during the COVID-19 Pandemic** April, 2022

  **Conference:** 6th Asian CHI Symposium 2022 - At: New Orleans, LA
  **Summary:** This study explores the healthcare challenges faced by Bangladeshis, exacerbated by the COVID-19 pandemic, through interviews with 32 individuals. It identifies issues like difficulty finding doctors and lack of medication price transparency, suggesting online platforms as potential solutions.

**Research paper**

- **Alpha-N-V2: Shortest Path Finder Automated Delivery Robot with Obstacle Detection and Avoiding System** June, 2020

  **Journal:** Vietnam Journal of Computer Science
  **Summary:** Building on Alpha-N, Alpha-N-V2 enhances self-driving delivery with advanced obstacle detection and path planning. RFID tags guide its route and calibrate its position, while Dijkstra's algorithm ensures the fastest path. Faster R-CNN and VGGNet-16 power its obstacle avoidance, making deliveries safer and more efficient.

- **Alpha-N: Shortest Path Finder Automated Delivery Robot** March, 2020

  **Conference:** 12th Asian Conference, ACIIDS 2020, Phuket, Thailand
  **Summary:** Alpha-N represents a significant advancement in autonomous delivery robots. Its ability to navigate efficiently, avoid obstacles, and accurately locate itself makes it a valuable tool for safe and reliable deliveries.