



## Senior Design Project

# 3-SURVIVORS: Rough Terrain Negotiable Teleported Mobile Rescue Robot with Object Detection

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Department of Electrical & Computer Engineering

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# DECLARATION

This is to certify that this Project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. Any material reproduced in this project has been properly acknowledged.

Students' names & Signatures

1. **Rafia Alif Bindu**

*Rafia Alif Bindu*  
12.09.19

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2. **Sazid Alam**

*Sazid Alam*  
12.09.19

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3. **Nusrat Jahan Moni**

*Nusrat Jahan Moni*  
12/9/19

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# APPROVAL

We, **Rafia Alif Bindu (ID-1510080643)**, **Sazid Alam (ID-1511394042)** and **Nusrat Jahan Moni (ID- 1510531042)**, members of CSE/EEE: 499B (Senior Project Design) **Group 07**, from the Electrical and Computer Engineering department of **North South University**; have worked on the project titled “**3-SURVIVORS: Rough Terrain Negotiable Teleported Mobile Rescue Robot with Object Detection**” under the supervision of Dr. Shahnewaz Siddique as a partial fulfillment of the requirement for the degree of Bachelors of Science in Engineering and has been accepted as satisfactory.

## Supervisor’s Signature

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**Dr. Shahnewaz Siddique**

**Assistant Professor**

Department of Electrical Engineering & Computer Science

North South University

Dhaka, Bangladesh.

## Department Chair's Signature

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**Dr. K. M. A. Salam**

**Professor**

Department of Electrical Engineering & Computer Science

North South University

Dhaka, Bangladesh.

# Acknowledgment

By the mercy of the Almighty, we have completed our Senior design capstone project entitled **“3-SURVIVORS: Rough Terrain Negotiable Teleported Mobile Rescue Robot with Object Detection”**.

Foremost, we would like to express our sincere gratitude to our advisor Dr. Shahnewaz Siddique for his continuous support in our capstone project progress throughout the whole 499 processes, for his patience, motivation, enthusiasm, and immense knowledge. His guidance helped us in all the time of research, writing and completing this project.

Our sincere thanks also go to North South University, Dhaka, Bangladesh for providing an opportunity in our curriculum which enabled us to have an industrial level experience as part of our academics.

Last but not least, we would like to thank our family as their inspiration and guidance kept us focused and motivated.

# Abstract

Today, technology is developing in the same direction in line with rapidly increasing human needs. The work done to meet these needs makes life easier every day, and these studies are concentrated in robotic arm studies. Robot arms work with an outside user or by performing predetermined commands. Nowadays, the most developed field of robot arms in every field is the industry and medicine sector.

When we talk about robots, people tend to think that robots are only suitable to use in the industry or just for the scientist to test new technologies. However, the main function of robots is to help humans in doing work either in the industries or just helping out doing normal household chores. To bridge the gap of the normal perception of “robots are for the industries only” is omitted for our project.

This project presents the development of a radio-controlled robotic arm. The movement of the robot arm can be controlled by a FlySky FS-CT6B 2.4GHz 6CH Transmitter and a radio controller. This robot can be used to demonstrate that a robot can be used inside a home or outside for daily human chores. The robot is controlled by Arduino that interfaced with the controller by a 500 GHz receiver. Designed and realized in the project, the robot arm has the ability to move in 6 axis directions with 6 servo motors. Two types of analysis was done for this project that is servo motor analysis and accuracy test. The accuracy test shows that the results of the actual output of the servo motor as compared to the input send to Arduino Uno via controller is between 90% to 95%. This prototype of the robot showed that the operation was successful. This user-friendly robot is expected to bridge the gap between robot and household chores.