Department of Electrical and Computer Engineering
North South University

Senior Design Project

IOT BASED SUBMERSIBLE ROV FOR PISCI CULTURE

Irin Akter	**ID # 1420891042**
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Faculty Advisor:

Mirza Mohammad Lutfe Elahi

Senior Lecturer

ECE Department

Spring, 2019

LETTER OF TRANSMITAL

5th April, 2019

To

Dr. K. M. A. Salam

Chairman,

Department of Electrical and Computer Engineering

North South University, Dhaka

Subject: **Submission of Capstone Project on "IOT BASED SUBMERSIBLE ROV FOR PISCICULTURE"**

Dear Sir,

With due respect, we would like to submit our **Capstone Project Report** on **"Iot based submersible ROV for pisciculture"** as a part of our BSc program. The report deals with pisciculture automation. We gained much valuable experience while working in this project which helped us immensely. We tried to the maximum competence to meet all the dimensions required from this report.

We will be highly obliged if you kindly receive this report and provide your valuable judgment. It would be our immense pleasure if you find this report useful and informative to have an apparent perspective on the issue.

Sincerely Yours,

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Irin Akter
ECE Department
North South University, Bangladesh

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Sailanjan Barua
ECE Department
North South University, Bangladesh

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Mehboob Hasan Rohit
ECE Department
North South University, Bangladesh

.....
S M Mujibul Karim
ECE Department
North South University, Bangladesh

.....
Sharmin Akter
ECE Department
North South University, Bangladesh

APPROVAL

Irin Akter (ID#1420891042), Sailanjan Barua (ID#1420871042), Mehboob Hasan Rohit (ID#1430746642), S M Mujibul Karim (ID#1511747042) and Sharmin Akter (ID #1421813042) from Electrical and Computer Engineering Department of North South University, have worked on the Senior Design Project titled "IOT based submersible ROV for pisciculture" under the supervision of Mirza Mohammad Lutfe Elahi 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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Mirza Mohammad Lutfe Elahi

Senior Lecturer

Department of Electrical Engineering & Computer Science

North South University

Dhaka, Bangladesh.

Chairman's Signature

…….

Dr. K. M. A. Salam

Professor

Department of Electrical Engineering & Computer Science

North South University

Dhaka, Bangladesh.

DECLARATION

This is to certify that no part of this report or the project has been previously submitted elsewhere for the fulfillment of any other degree or program. Proper acknowledgement has been provided for any material that has been taken from previously published sources in the bibliography section of this report.

Students' names & Signatures

1. Irin Akter

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2. Sailanjan Barua

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3. Mehboob Hasan Rohit

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4. S M Mujibul Karim

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5. Sharmin Akter

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ACKNOWLEDGEMENTS

First and foremost, praises and thanks to the God, the Almighty, for His showers of blessings due to which we have successfully completed our senior design project entitled ”IOT BASED SUBMERSIBLE ROV FOR PISCI CULTURE”.

We would like to express our sincere gratitude to our advisor, **Mirza Mohammad Lutfe Elahi** of the Electrical and Computer Engineering Department at The North South Uni- versity, for providing his invaluable guidance, comments and suggestions throughout the course of the project. We would especially thanks to our advisor for constantly motivating us to work harder and getting us unique ideas. He has taught us the methodology to carry out the research and to present the research works as clearly as possible. It was a great privilege and honor to work and study under his guidance. We are extremely grateful for what he has offered us. We would also like to thank him for his friendship, empathy, and great sense of humor.

We are also very grateful to North South University for giving us the capstone platform which gave us an opportunity to display our work to experienced faculties, fellow classmates and industrial people. There feedback helped us in evaluating our success in finishing the senior design project.

We are extremely grateful to our parents for their love, prayers, caring and sacrifices for educating and preparing us for our future.

ABSTRACT

In this work we propose an IOT based submersible ROV for pisciculture for real-time monitoring and automatic control of fish farming.

Our project is divided into three parts: a submersible ROV, a sensor integrated system box and an automated system assistance box.

Our system is held in the center of the ROV. Our system consists of various sensors: temper- ature, turbidity, total dissolved solid and pH integrated in raspberry PI. A camera module is used in ROV for underwater image processing and an outdoor camera in connected with the outdoor system box for indoor surveillance. Some parts of image processing are also included in our project which is done using the surveillance camera module. Fish tracing, fish size measurement and fish counting is done via the camera module integrated in the system box and thief detection and fire detection is done using camera module 2.

Healthy fish rearing requires intensive care and ensuring stable and healthy production environment inside the fish farm task is a challenging task. Water quality, oxygen concentration in water, temperature plays important roles in intensive fish farming management. Our goal is to make fish farming easier, cost efficient and being automation in this field.