

Magnus Renaa Kjørseng

# **Simulation of a hanging ROV for seabed plastic pickup**

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Supervisor: Øivind Kåre Kjerstad

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Norwegian University of Science and Technology

Faculty of Engineering

Department of Ocean Operations and Civil Engineering



## ABSTRACT

The project Plan Sea is a student project etc. etc.

A non-buoyant ROV is designed to hang from a USV via a cable. The ROV will pick up seafloor litter. This becomes a coupled system. This project and report has had the focus of making a simulator for the coupled system for producing an environment in which rapid prototyping of a control system is possible.

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## INTRODUCTION

### **1.1 The Plan Sea Project**

- Seafloor litter
- little study on how to deal with it
- harmful to humans and the environment
- need a solution

#### **1.1.1 The proposed solution**

- Surface vessel with ROV gripper
- basket solution
- operational criteria (weather etc.)
- possible future expansion
- The need for control systems

### **1.2 Control systems**

#### **1.2.1 Considerations because of a coupled system**

#### **1.2.2 The need for rapid prototyping**

## **2.1 Literature review/State of the art**

- Little specifically helpful literature
- Some help from deep sea lifting and ROV simulation papers

## **2.2 Control theory?**

Basic control theory? ?????

## METHODS

### 3.1 AGX

- Describe use as simulation framework
- Describe sim setup
- Discuss alternative solutions (make your own, do numerical analysis)
- Hull and ROV shape can be exchanged, allowing for greater flexibility in a future system
- Can be used to scale things like winch strength/responsivity or cable elasticity

#### 3.1.1 Capabilities and limitations

### 3.2 ROS2

- Use for simulation and IRL
- assists in rapid prototyping as sim or hardware can be interchanged and the control system is agnostic to it

#### 3.2.1 Describe ROS setup with nodes used etc.

RESULTS

4.1 Simulation results

4.2 Control system results

DISCUSSION

**5.1 Useful as rapid prototyping tool?**

**5.1.1 Ease of use**

**5.2 Future applicability**

**5.2.1 IRL testing proposal**

Master thesis etc.



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CHAPTER

**SIX**

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## CONCLUSIONS

Conclusion