

**DESIGN AND DEVELOPMENT OF A REMOTELY
OPERATED UNDERWATER VEHICLE FOR VIDEO
TRANSMISSION**

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Department of Electrical Engineering

University of Moratuwa

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Department of Electrical Engineering

University of Moratuwa

Sri Lanka

April 2014

Declaration of the candidate and the supervisor

“I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate has carried out research for the Masters Dissertation under my supervision.

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Abstract

Today, Sri Lanka is no exception from performing underwater observations, search and rescue missions being very closer to a major maritime lane. According to the applicable maritime standards, standing operating procedures diving and salvage operations are essential part of any sea going unit.

Once urgency calls on for an underwater inspection or observation, the existing administrative set up is required to swing into operations of a scale to which it is not equipped. The human diver with limited or no resources for transferring underwater video is performing the work in isolation and endangering own life.

Therefore, the researcher's aim is to design and development of a remotely operated underwater vehicle for video transmission and to perform an automated dive of the vehicle into a predefined depth, take over tilt control and achieve automated pitch stability and perform underwater observation through a video camera where surge control is by joystick operated thrusters control mechanism. It is therefore clear in this endeavour that the researcher had identified the main facts which are involved in design and development of remotely operated underwater vehicle. Throughout the research a special emphasis has been put up in analyzing the already available designs and related findings and discussions.

The researcher developed the control system in such a way that the intended controls were achieved with three control models. The depth control model, pitch control model and surge control model were separately designed for better controllability and the vehicle manoeuvrability was achieved. Thus, with extensive scientific and engineering approach directed the design goal of development of the underwater vehicle and associated control system for transmission of videos. The simple test procedures were followed to test the components and the vehicle.

The current method of employment of human diver can be replaced with the designed remotely operated underwater vehicle.

Dedication



To my beloved
University of Moratuwa, Sri Lanka
Mother, Mrs.: (late) UD Dayawathy Ranasinghe
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And
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Father, Mr. (late) RAD Ranasinghe

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