

## INTRODUCTION

Most educational institutions tend to purchase lab equipments from local and international manufacturers where these equipments are normally extremely expensive especially the imported equipments from overseas. While ironically the staffs themselves, lectures and technicians have the capabilities and expertise to produce the same standard of equipment if not better. Therefore, this project has been done in order to proof that the lab equipments can be constructed in a cheaper price where the features of the equipments can be determined and specified more correctly, suit to the real requirements.

The scope of this research project is to design and construct a mechatronics trainer accompanied with teaching modules and a mobile robot which can be used together with the trainer and modules. The idea is that students can program the PIC microcontroller first on the trainer, check the reliability by using simple sensors and actuators that are available on the trainers, and then place the PIC microcontroller on the mobile robot to do its task after their programs have been verified.

## COST EFFECTIVENESS

The use of cheap, available but functional components saves a lot of cost of the trainer and mobile robot. The box of the trainer is made of plastic and the circuit is done on strip board instead of donut board or PCB. The chassis of the mobile robot is made of alluminium which is low cost.



Figure 1: The Mechatronics Trainer



Figure 2: The Mobile Robot

## NOVELTY AND INVENTIVENESS

The novelty of this product is the compactness of the training board and the robustness of the mobile robot.

## ADVANTAGES

The trainer and the mobile robot is an effective way to introduce students to mechatronics students especially in programming and control. The basic sensors and actuators are fitted on in one box as a trainer and its combine application can be performed by the supported mobile robot.

## COMMERCIAL POTENTIALITIES

The trainer and mobile robot is targeted for students pursuing mechatronics or programming subjects related to mechatronics as students only need to connect the inputs and outputs to the microcontroller pins via single core jumper wires. Due to its simplicity and cost effective components, the trainer and mobile robot can be applied to any tertiary institution that has mechatronics related courses.

## Researchers Info

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