

# 2011 年臺灣國際科學展覽會

## 優勝作品專輯

國家：New Zealand

編號：100034

作品名稱

**Transformer Robot**

得獎獎項

二等獎

作者姓名

**Nicholas Mabey**

## **Abstract**

Nicholas's project is a transforming robot, who he has named Reggie. He's about a foot tall and can transform from a biped into a vehicle and vice versa?

Reggie has been Nick's project for just under a year now, mainly working on him in technology classes. He operates without physical connection to anything else, so everything he needs from micro controllers to power is stored somewhere on Reggie's body?

Reggie is controlled through a programmable Arduino board (programmed in C++) that is connected up to a motor driver, for controlling the two driving motors and an SSC-32 servo controller for controlling the 14 servos via serial port. The Arduino uses the SSC-32 to coordinate the servos movements using pre-programmed sets of movements stored in procedures in order to complete all actions.

All the parts were produced on a 3D CAD system to begin with, as well as the robot as a whole, although the design did change drastically over the course of its construction and now is considerably different from the original design as there were many problems and complications ranging from space to torque issues that called for a change in design.

Most of the parts were from the servo erector set from lynx motion, although some of them were used in the way they were intended to and most of them were modified slightly. Some parts Nick manufactured himself either on a rapid prototyping machine, a lathe or milling machine and sometimes a combination of them or even high temperature soldering?

Currently Reggie is capable of driving and standing up and is currently radio

controlled. He will eventually be capable of walking and modifications to allow him to (such as stronger leg servos) have been made to facilitate that, but it is possible more may have to be made.

## 評語

本作品的機器人是自行設計組裝而成，利用航空遙控器，可以改變機器人的站立或臥倒姿勢。機器人臥倒時，可以用關節上的轉輪轉動而移動位置，雖然機器人的 Reggie 尚未有成長空間，但是一件很好的工程作品。