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一、構想與策略分析

一、構想：

參照動物之行動，研究動物之行走、跑步等等之移動方式，
最終以仿生獸之機構當作機器人起始點。

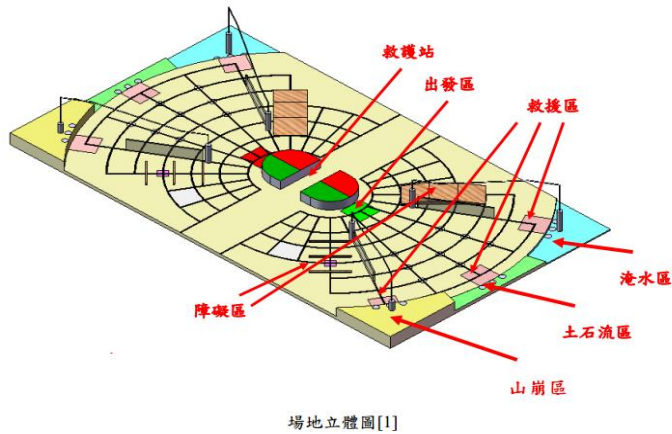
Referring the animal's motions such as the bionic beast,
we begin to design a robot.



二、分析：

救災區域分為河川上游之「山崩區」、中游之「土石流區」
與下游之「淹水區」等三區，每區均有「麒麟娃娃」等待救
援。

The relief area along the river is divided into three
zones: the upstream of the landslide area, the middle
one is the debris flow area and the downstream is
flooded. In each district, there are Unicorn dolls
waiting for rescue.



本次場地需克服：

- a. 5cm 之橫木條
- b. 20cm 高之斜坡
- c. 40cm 高之高台(山崩區)夾取
- d. 低於地面 5cm 高(淹水區)之夾取
- e. 200cm 高之吊掛並取下救援箱
- f. 25 公斤的限重
- g. 1 立方公尺的限寬

The venue is to be overcome:

- a. 5cm the crossbar Article
- b. 20cm high slopes
- c. 40cm high of high station (landslides District)
- d below ground 5cm high (flood zone) of the gripping
- e. 200cm high of the hanging and take down the rescue box
- f. 25kg limit weight
- g. 1 cubic meter limit width

e. 200cm high of hanging and remove the rescue box f. 25
kg limit g. 1 cubic limit

二、機構設計



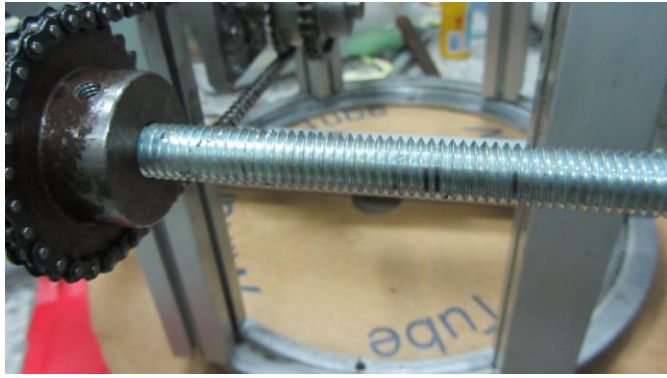
(上圖)機架 以**鋁矩型**做為基本架構

Rack as a basic framework aluminum rectangular



(上圖)經過數代的設計後，我們選擇以**鏈條帶動鏈輪**做為傳動

After generation design, we have chosen as a transmission
chain drive sprocket



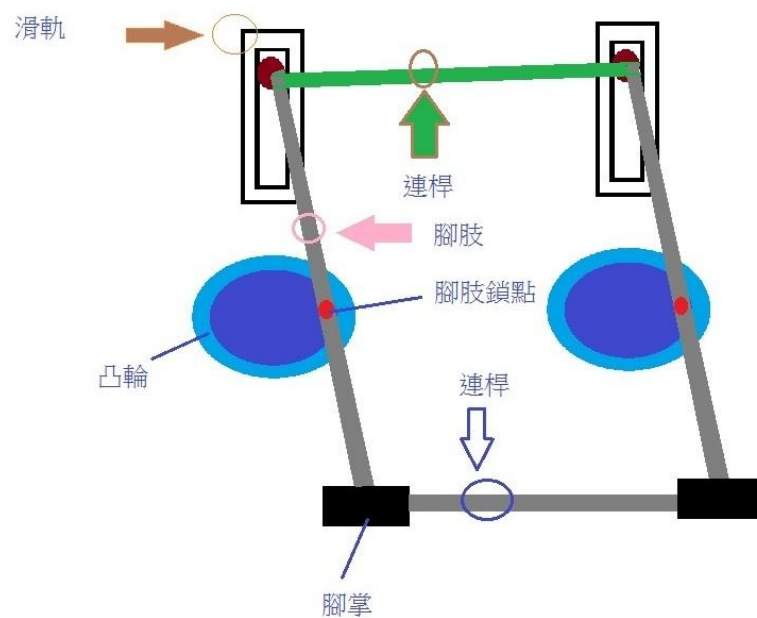
(上圖)以四分(4")的牙條做為傳動軸

Quarters (4 ") threaded rods as the drive shaft

三、輪子驅動設計

腳肢設計

(下圖)腳肢設計



平行四邊形之連桿機構，前進與後退使得前後腳一制，解決死點之外，也易於行走。

Parallelogram linkage mechanism, the forward and backward so that the front and rear legs, a system to

solve the dead, but also easy to walk.

(下圖)腳掌設計



(上圖)加大腳掌面積，以止滑墊作為腳掌，達到止滑紙滑果

Increase the soles of the feet area, as the soles of the feet
to slip mat, reaching a slip of paper slip fruit



(上圖)將古老的飯蓋加工成夾爪，回收再利用。

Cover the ancient rice processing jaws recycling



(上圖)夾爪升降桿。

Jaw lift rod



(上圖)夾爪伸出滑輪

Extended pulley lift rod gripper jaws



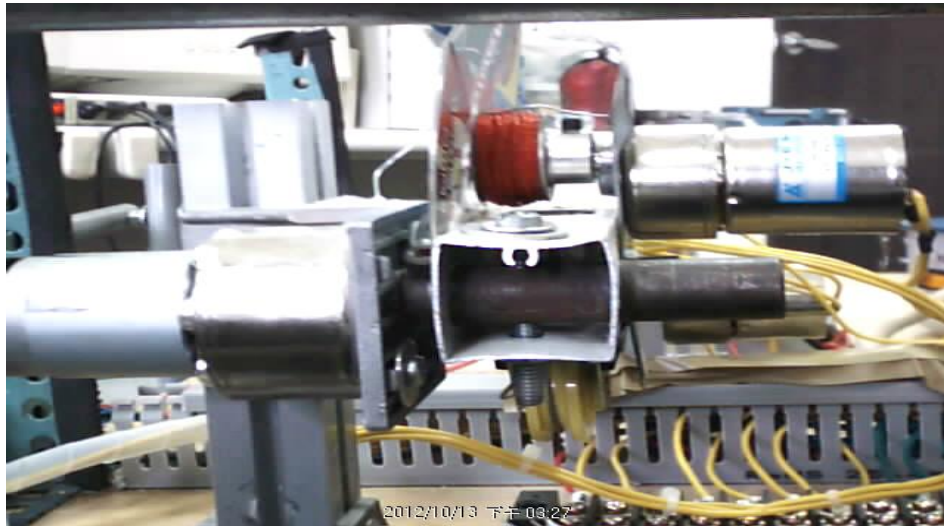
(上圖)夾爪伸出收回滑輪

Jaw protruding recover pulley lift rod gripper jaws
extended pulley



(上圖)夾爪抓、收. 自製捲線器

Clip claws close homemade reel



(上圖)升降桿與捲線器馬達

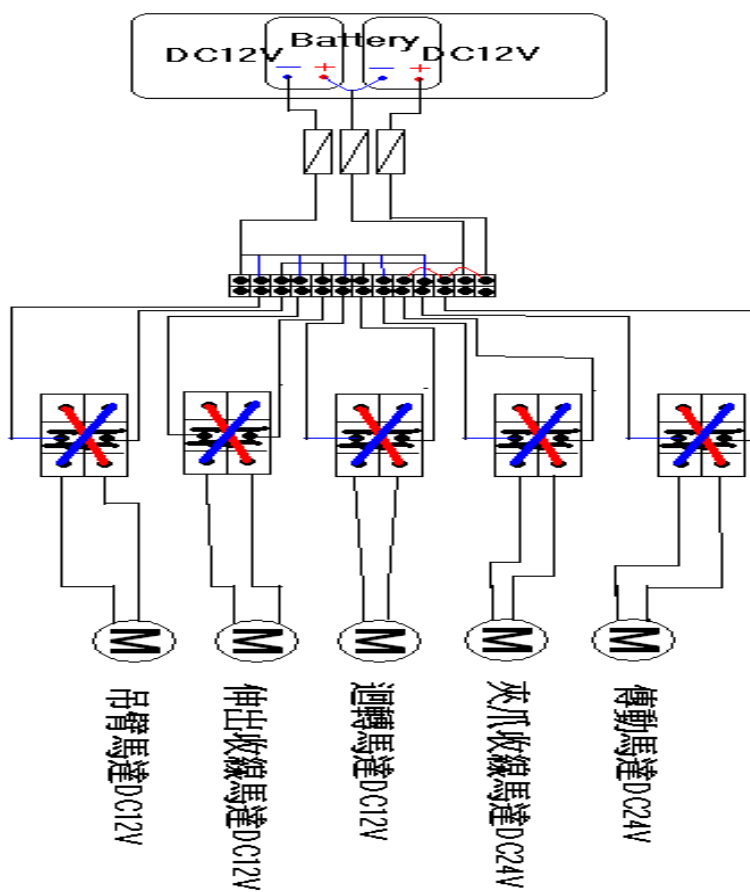
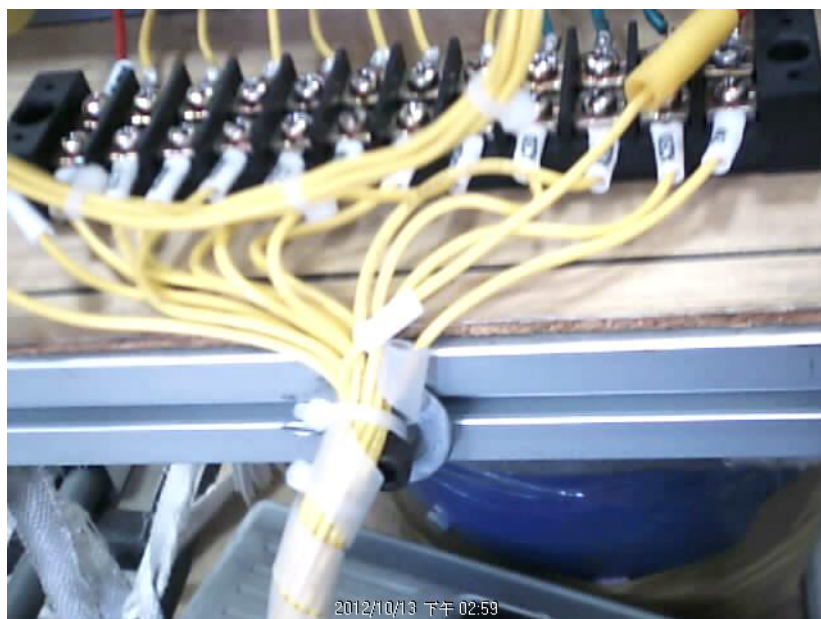
Lift rod and reel motor



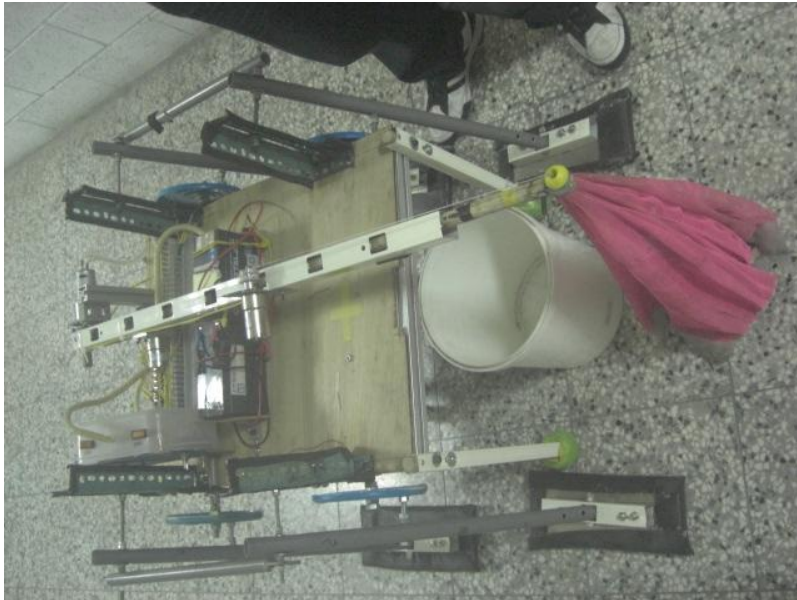
(左圖)夾爪張開

The jaws open

四、電路設計

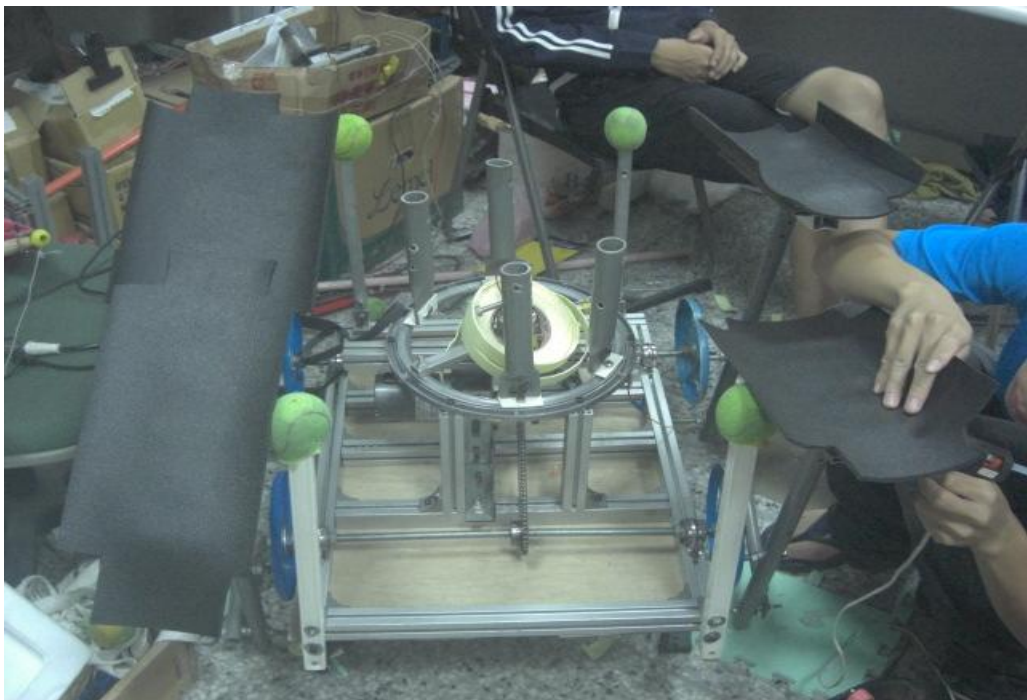


伍、組裝、測試與修改



直線走路測試

Straight-line walk test

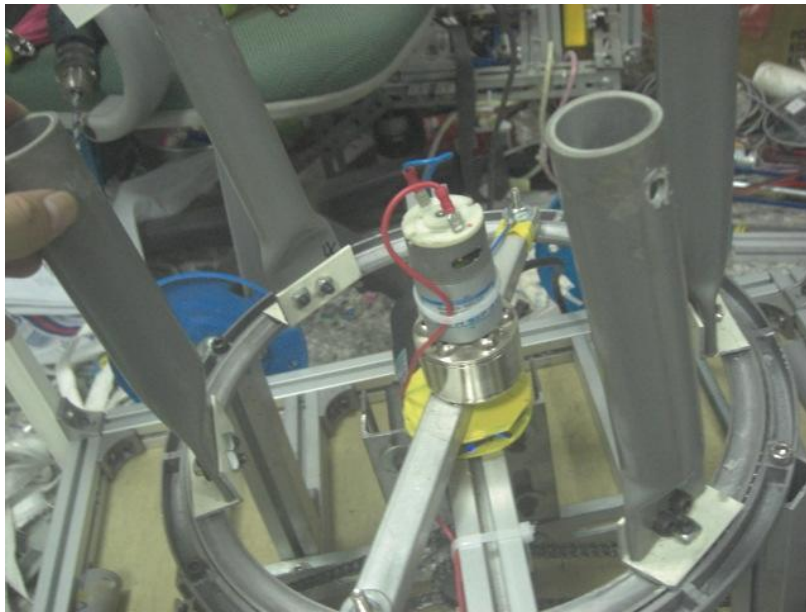


黏貼腳掌的止滑墊

Slip pad adhesive soles of the feet

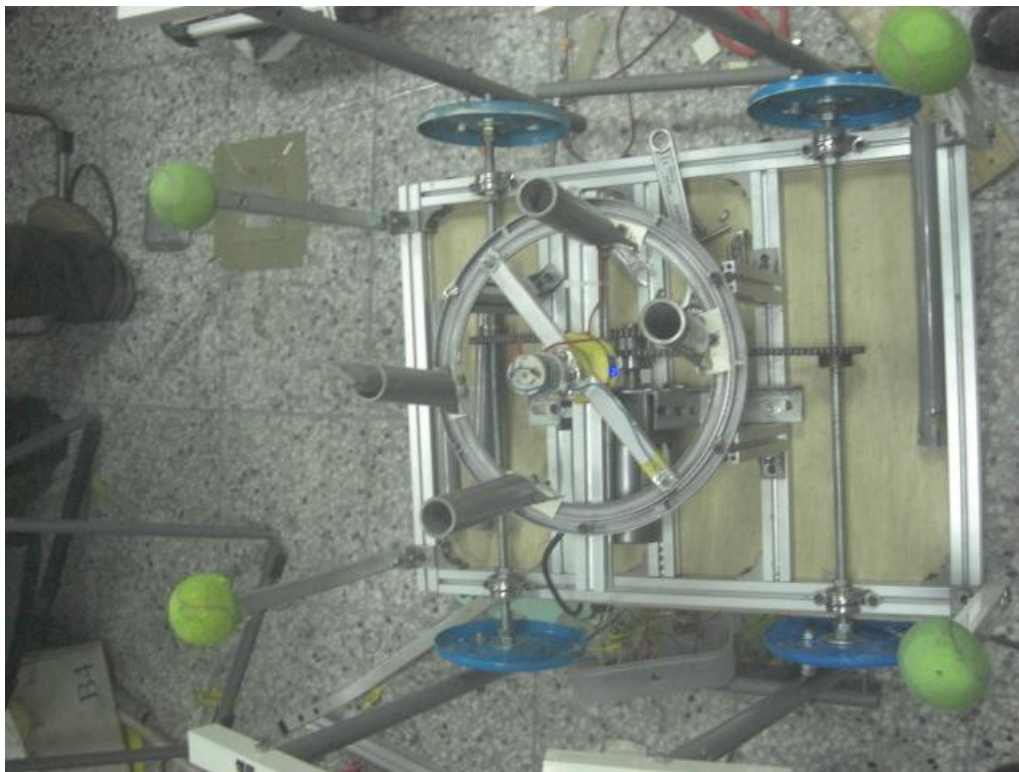
參賽隊伍人員及機器人簡介

Team Member and Robot Introduction



迴轉台之測試旋轉

The turret of test rotation



機器人先以倒立方式空轉試轉

Robot idling try to turn first to inverted way

參賽隊伍人員及機器人簡介

Team Member and Robot Introduction

陸、機器人創意特色說明

- 一、強調環保概念，大部分材料為回收再利用，歷屆 TDK 之剩材，最少的金錢創造最大的效益。

- Emphasize the concept of environmental protection, most of the material for recycling, reuse, successive TDK of leftover material, at least the money to create the greatest benefits.

- 二、經費控制，能省則省。

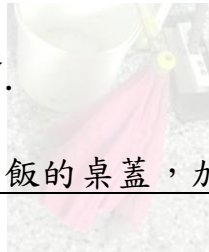
- Funds control, could save the province.

- 三、帶座式軸承，是滑輪的軸承搭配 U 型管夾，自行 D I Y 做成的。



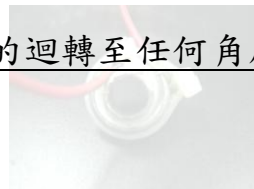
With pedestal bearing, pulley bearings with the U-tube clip, made their own DIY.

- 四、夾爪，是將古早以前蓋飯的桌蓋，加以改裝。



Jaws, previously Bowl in the old days, table cover, be modified.

- 五、自製滑環，讓機台可以無限制的迴轉至任何角度。



參賽隊伍人員及機器人簡介

Team Member and Robot Introduction

Homemade slipring, so that the machine can be unlimited return transferred to any angle.

參、參賽心得

我們的隊名志創一心，在大學一年級碰巧看到了 TDK 比賽報名表，基於好奇心以及對機器人的熱血就參加了比賽，在製作過程中也發生了些變數，找材十分不易，如沒有合適的材料就得去購買，因考慮到計畫趕不上變化，機構改了無數次，就決定逆向工程，六月份放學時常留校做到晚上十二點左右，暑假期間更是天天往實驗室裡報到，每天固定會開一次研討會以及工作進度，確保工作有照常在運作，機構出現問題也馬上翻資料進行修改，跟老師討論如何解決，在試走過程中傳動軸的馬達變速箱因經不起重量，時常斷齒，得花一大筆經費不斷地測試。

六月~十月這長達五個月的製作時間，學會了如何自行更換、簡易修理變速箱，如何找材、購材之外，三個人團隊合作更為重要，三個人就多了三倍效率、三分經驗、六隻手，也知道連桿多跟少都不行，不管比賽結果如何，志創一心是我們三人永遠的回憶。

Our team name Chi Chong bent, happened to see TDK Competition

參賽隊伍人員及機器人簡介

Team Member and Robot Introduction

Entry Form in the first year of college, participated in the competition based on curiosity as well as blood on the robot, some variables in the production process, find the material is not easy, as there is no suitable material would have to buy, plans to keep up with changes, taking into account the institutions changed numerous times, decided to reverse engineering, staying in school often do midnight in June, during the summer every day to the laboratory report each day will open a seminar as well as the progress of work to ensure that work as usual in the operation of the institution problems immediately turn over information to be modified with the teacher to discuss how to solve the motor gearbox due to the drive shaft in the process try to go through the not from the weight, often broken teeth, have to spend a great deal of money to continue to test.

June to October, this five-month-long production time, learn how to replace, easy repair gearbox, how to find the material, to purchase materials, three people teamwork is more important, with three people three times more efficiency,

參賽隊伍人員及機器人簡介

Team Member and Robot Introduction

one-third of experience, six hands, and know that the the rod
more with less will not work, regardless of the results of the
competition, Chi Chong bent forever the memories of the three
of us.