

# 參賽隊伍人員及機器人簡介

## Team Member and Robot Introduction

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Flowers worthy to be straight off

### ※內容需中、英對照※

#### 壹、參賽隊伍人員：

一、指導老師：蔡聲鴻 SHENG-HONG TSAI

二、組員：胡光宗(GUANG-ZONG UH) 林子量(YU-LIANG LIN)

王威(WEI WANG)

#### 貳、機器人簡介

##### 一、構想與策略分析

###### 1. 過木條

(1) 以對腳的方式「過」木條，因為是比賽所以無法百分之百確定當下一定可以用跨過的，所以會把腳底的部份做成圓弧型，讓腳一使不能用跨過的也能用踩的過去

###### 2. 過梯形便橋

(1)我們將重心配置好讓上橋跟下橋時不容易翻倒，也因為整體形狀為矮胖型更使的不易翻覆。

###### 3. 抓取目標物

(1)模仿堆高機夾爪模式來改成可以克服比賽規

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則的樣式。

### 4. 放置目標物

- (1) 目前是計畫製作一隻簡易的可伸縮的手臂來  
做掛在纜繩上的動作。

**One 、 idea:** moving way in imitating animals walk way, for  
example As the puppy moves is to go on foot to do move,  
can Allowing the body to move more stable. Feet but  
because to do so As a whole must be made the chunky type  
before better

### **Second 、 the strategy analysis:**

#### 1 over wood

- (1) Feet "wood, because it is a game it is not absolutely  
sure that the moment will be able to use across, so will the  
majority of the soles of the feet be circular, so that the foot  
can step on the past.

#### 2. Over trapezoidal temporary bridge

- (1) Our configuration of the center of gravity so that on the  
bridge with the lower bridge is not easy to turn Down,  
but also because of the overall shape of the chunky  
type so that's not easy to turn  
Reply

#### .3. Crawl target

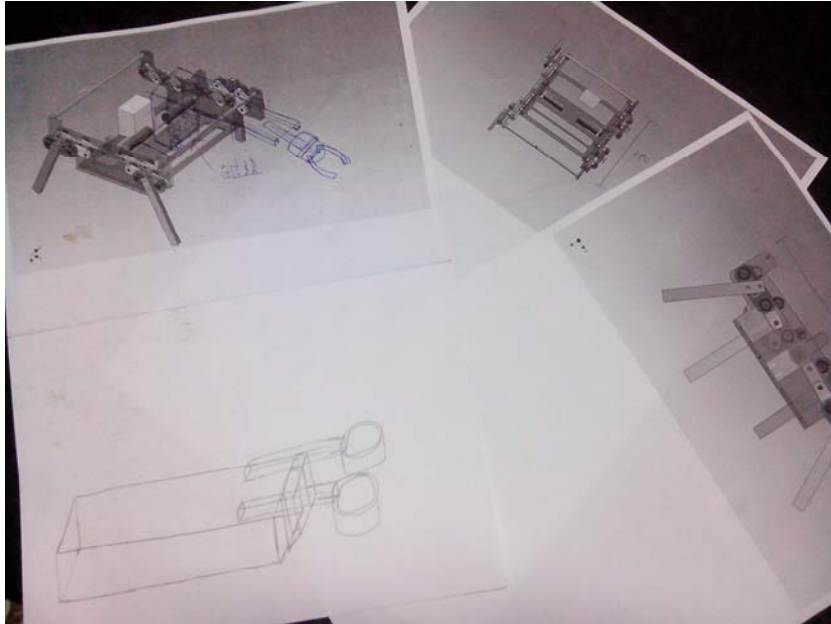
- (1) The imitate Stacker jaws mode to change the contest  
rules can be overcome Then the style.

#### 4. Place the target

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(1) Is currently the project produced a simple telescopic arm to Do the hanging rope action.



### 二、機構設計

決定以模仿動物對腳走時，想到可以用像傳統火車輪子的移動來使腳做對腳。在設計曲柄機構時，因為考慮到每一隻連桿都可以完全的傳達力到腳上，規畫了不少時間。在加工的部份我們將設計好的圖面送到 CNC 車床跟 CNC 銑床進行加工，加工完後再自行整理及修改。

手臂用和堆高機夾爪的模式再將它改成可以克服比賽規則的樣式。

Decided to go on foot to mimic animals think can be used like conventional wheels of the train's moving the feet to do on foot. In the design of the crank mechanism can be given to each rod fully convey the force to the feet, and a lot of time planning. In the processing part, we will design a good drawing sent to the CNC lathe with CNC milling machine for processing, processing and then to organize and modify. Arm with the jaws and Stacker mode and then change it to a style that can be overcome by the rules of the game.

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### 三、電路設計

電路連接的部份，分為足部運動跟抓取目標物以及放置目標物的兩大部分。足部運動是用兩個 12V 的 DC 直流馬達來做為動力，一個馬達給予一個 12V 的電瓶做為電源。將馬達與電瓶的線路搭接好後，再將電瓶正極的一頭連接到掀動開關，再從先定開關連到馬達，這樣開

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關 ON 時馬達就會啟動。抓取部分的電源是跟馬達同樣的電源，用端子台來跟電瓶做連接，再將線連到控制手臂氣壓伸縮的電磁氣壓閥，來做手臂氣壓的控制。

Part of the circuit connection, is divided into two parts of the foot movement with crawl target and place the target. Foot movement is done with two 12V DC motors driving force, a motor to give a 12V battery as a power source. Motor and battery line lap after then battery positive one connection to the tilt switch from a fixed switch connected to the motor, so that the switch ON when the motor starts. Grab part of the power is the same power with the motor terminal station to do with the battery connected, then the line connected to the control arm to do arm Pressure control solenoid pneumatic valve, Pressure scalable.



### 四、組裝、測試與修改

在組裝的時候為了要求每一腳的精準，所以一邊組裝還要一邊調整才可以讓每一個曲柄機構都可以同步使得整體可以順利行走。測試移

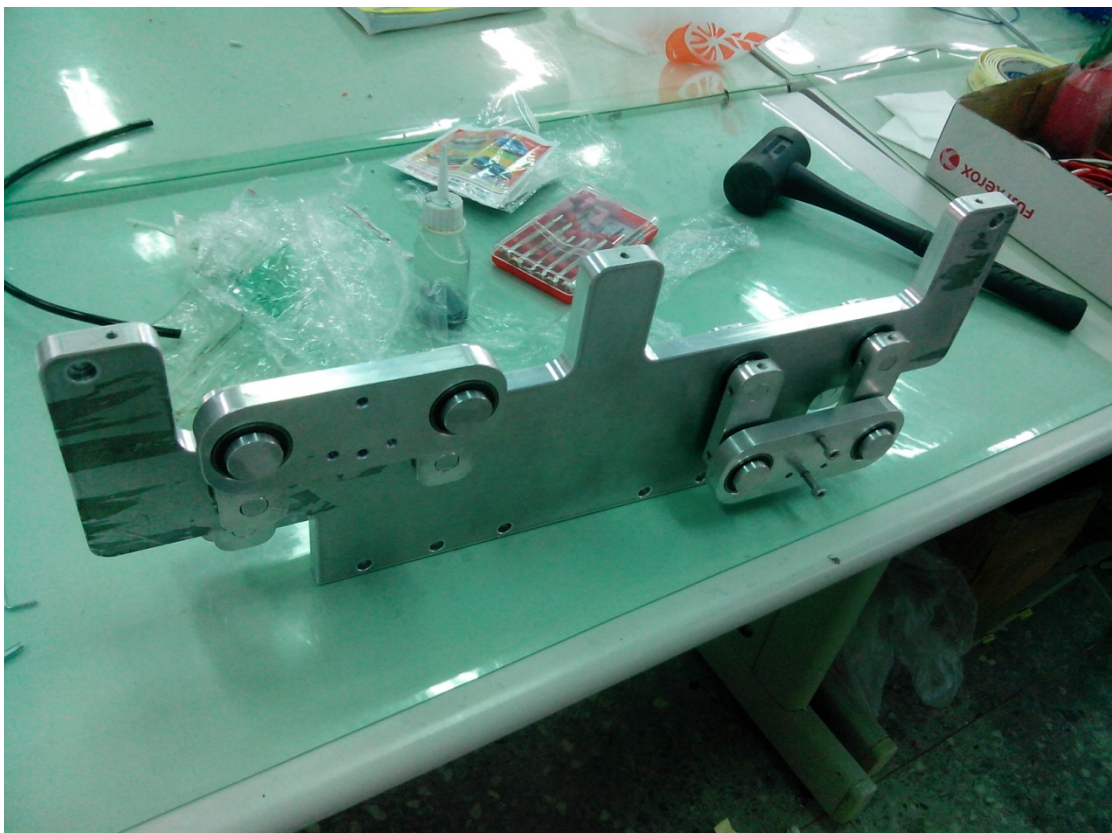


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動時發現會有非常大的晃動，問題在於整體重量、重心和腳的行走方式。我們將重量減輕、重心改變還有把腳從直條的方式偏一個角度，呈現八字型和腳底做成有弧型的。修改完測試後發現有明顯改善晃動的問題。

Assembly requires the precision of each foot side of the assembly but also side to adjust a crank mechanism can be synchronized so that the overall smooth walking. There will be a very big shake, the problem is that the overall weight, center of gravity and feet walking test mobile. We will reduce the weight and center of gravity change there feet from the vertical strips partial an angle, showing the character type and soles made there arc. After you modify the test found significant improvement shaking.



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### 六、機器人創意特色說明

我們的機器人在改善晃動後還是有晃動，但這不影響行走的部份，反而讓機器人像搖木馬一般的移動。非常的有趣。而且我們的機器人從外觀上看似很重，但實際測量是沒有外觀上所想的那麼重的。

Our robot improve shaking or shaking, but this does not affect the walking part, but like rocking horse general mobile robot. Very interesting. And our robot from the seemingly heavy appearance, but the actual measurement is not think appearance is so heavy.

### 參、參賽心得

首先，我要感謝我們的班導老師，這次參加機器人比賽的機會是他給的也是他說服我們參加的並且細心的給予指導與建議，另外也非常感謝我們的技術指導 主任 達哥 他們願意不屈不饒的教導我們願意給我們時間讓我們從零開始學起真的是讓我們非常感動，沒有這幾位老師細心的關照 就沒有今天的我們 非常感謝老師能替我們撐腰，今天得來的成就才能成為可能。

First of all, I would like to thank our class guided teacher this opportunity to participate in robot competitions he gave is that he has convinced us to participate and careful guidance and suggestions, and is also very grateful to our technical guidance director Dage they are willing indomitable Rao's teachings, we are willing to give us time, let's start from scratch to learn the really let us very touched several teachers attentive care today we are very grateful to the teachers for us backing achievements to come becomes possible.

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