

# 參賽隊伍人員及機器人簡介

## Team Member and Robot Introduction

組別： <input checked="" type="checkbox"/> 遙控組 <input type="checkbox"/> 自動組	指導老師：林永定老師
學校名稱：南榮技術學院	隊伍名：Cross 扁擔哥
(School : ) Nan Jeon Institute of Technology (Team name : ) Cross shoulder pole elder brother	

### ※內容需中、英對照※

#### 壹、參賽隊伍人員：

指導老師：林永定

組員：陳俊吉、陳祈謀、施宏儒

Instructs teacher: Forest Yongding

group: Chen Junji, Chen Qi stratagem, Shi Hongru

#### 貳、機器人簡介

##### 一、構想與策略分析

機器人的走路機構是利用四連桿帶動其關節機構，讓機器人走其路來像人的樣子。而在救援娃娃的方式，我們利用圓筒將娃娃套入，再將娃娃倒入自己設計的吊籃裡，利用模仿雲梯車上升的方式以及左右伸縮的方式將娃娃送掛置上處與取籃跟送至救護站。

The robot walks the organization is uses four connecting rods to lead his the joint organization, lets the robot walk its group to look like human's appearance But in rescues baby's way, we use the cylinder to enter the baby wrap, again pours into the baby in the hanging basket which oneself designs, the use imitation scaling ladder vehicle rise way as well as about expands and contracts the way delivers the baby hangs sets place and takes the basket with to deliver sets the emergency station.

##### 二、機構設計

夾爪設計利用 PVC 塑膠板捲黏成圓筒結合洗菜籃與墊板製作而成的，控制夾爪救援娃娃的機構利用齒條帶動齒輪的方式使夾爪可以前後伸縮、上下移動，旋轉機構利用馬達旋轉的方式，將整個夾爪機構轉到吊籃處做倒娃娃之動作，升降機構利用交叉連桿上升及下降，其傳動是由鏈條帶動螺桿的方式，左右移動機構是利用齒輪帶動齒條的方式作左右的移動。

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The gripping jaw design models the off-set volume using PVC to mount the cylinder union to wash, the control gripping jaw which the shopping basket and the backing strip manufacture becomes rescues baby's organization using the rack impetus gear way to enable the gripping jaw to be possible around to expand and contract, to reciprocate, the rotary mechanism use motor revolving way, changes to the entire gripping jaw organization the hanging basket place to do but actually movement of the baby, the elevating mechanism use overlapping connecting rod rise and the drop, its transmission is by the chain link impetus screw rod way about, about the shifting mechanism is makes using the gear impetus rack way the migration.

### 三、輪子驅動設計

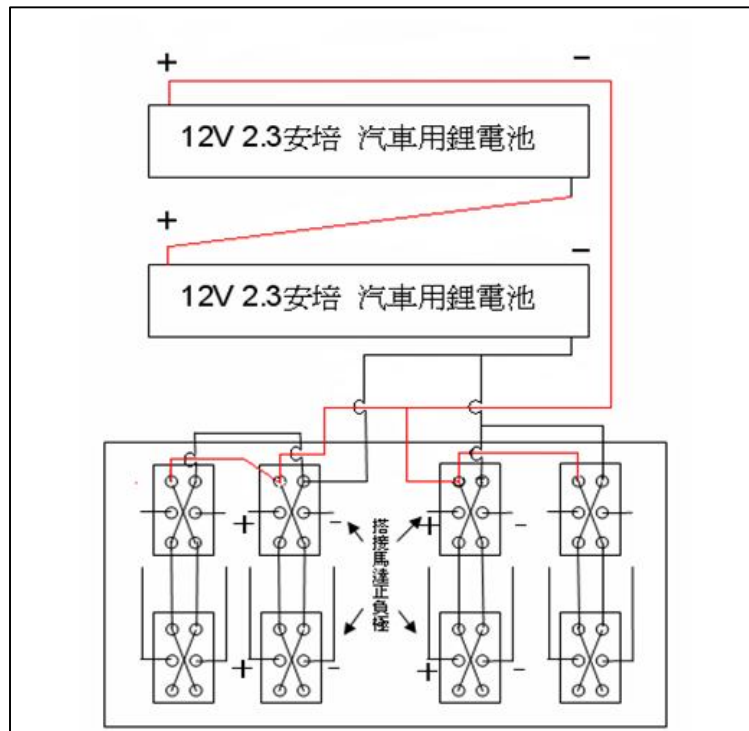
足步機構是由四連桿機構帶動許多的關節機構比以往的四連桿的走路機構複雜多了，其作動方式是由馬達帶動小鏈輪和鏈條再由大鏈輪帶動偏心輪，偏心輪的角度相差180度，可使足部機構能上下移動、左右前進並能輕易突破陡峭的障礙地形。

A foot step organization was leads many joint organizations by four link motion gears to walk the organization the former four connecting rods to be complex more than, it did moves the way is drives the small chain wheel and the chain link by the motor by the big chain wheel impetus eccentric, the eccentric angle differs again 180 degrees, might enable the foot organization to reciprocate, about the advance and could break through the steep barrier terrain easily

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### 四、電路設計



電路設計圖

### 五、組裝、測試與修改

我們的機器人足部機構是利用四連桿機構配合偏心輪使其能有往復運動來通過各種障礙，但這個足部機構卻是我們修改最大的地方，組裝連桿時因為多連桿機構一個點跑掉就會整個無法順利作動，而再固定軸承座的鋁板因受力太重而經常破裂後改成較厚的鐵板才改善，而夾爪的機構原是用螺紋帶動之活動夾爪後經測試無法克服最高與最低落差，經過修改之後改用齒條和齒輪配合套筒住娃娃而且底部黏有墊板切割成放射型讓娃娃只進不出，不僅能克服高低落差還能省去不少時間，升降機構是利用三節式伸縮桿與交叉的中空鋁組成的，其動力由鏈輪與鏈條帶動螺桿的方式使機構上升跟下降，左右機構是利用齒輪轉動齒條作左右的移動，所以不僅是機構組裝好就好測試與修改更是不可或缺的。

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Our robot foot organization is uses four link motion gear coordination eccentric to enable its to have the reciprocal motion to come through each kind of barrier, but this foot organization is actually we revises the biggest place, assembles when the connecting rod because a multi-link motion gear spot runs away can entire be unable to do smoothly moves, but the fixed bearing seat aluminum sheet too is again heavy after the stress and bursts frequently alters to the thick sheet iron only then to improve, but the gripping jaw organization is originally is unable activity gripping jaw after the thread impetus after the test to overcome Gao Yuzui the low dropping variance, after the process revises changes to the rack and the gear coordination sleeve is occupied by the baby moreover the base to mount has the backing strip to cut Becomes the emission to let the baby only not be able to enter, not only can overcome the height dropping variance also to be able to omit many time, the elevating mechanism is uses three type expansion links and the overlapping spatial aluminum composition, its power causes the organization rise by the chain wheel and the chain link impetus screw rod way with the drop, about the organization is uses gear-driven tooth conditional about the migration, not only therefore is the organization assembles good on good tests and the revision is indispensable.

### 六、機器人創意特色說明

夾爪機構是兩組的齒輪與齒條以馬達心做為轉軸所構成，由馬達正反轉的控制使齒輪在齒條上做上下以及前後伸縮套取娃娃在以旋轉機構將娃娃倒入吊籃裡，套取娃娃的套筒是由 PVC 塑膠板捲成筒狀底下黏至挖空的洗菜籃以及兩塊墊板，這樣娃娃套入時才會卡入套筒裡，升降機構的交叉桿的概念是來自火災救援的雲梯車，這種機構能夠吊籃與取籃節省重量。

The gripping jaw organization is two groups of gears and the rack does take the motor heart as the revolution axis constitutes about, the control which reverses is causing the gear by the motor to do on the rack as well as around expands and contracts obtains by illegal purchase the baby to pour into in the hanging basket in the rotary mechanism the baby, obtains by illegal purchase the baby baby's sleeve is models by PVC off-set coils under the tube shape to mount to the hollow washes the shopping basket as well as two backing strips, such baby wraps stylishly only then meets the card to enter in the sleeve, the elevating mechanism crossing pole concept is comes from the scaling ladder vehicle which the fire rescues, this kind of organization can hanging basket with take the basket to save the weight.

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### 參. 參賽心得

經過這次的比賽，使我們也體會到原來付出多少就收獲多少，雖然沒辦法完全得到我們所要的目標，但也想到如果我們沒有這樣的付出，怎麼可能有這樣的成果，雖然我們在場上的感覺很緊張也很害怕，超害怕機器人出什麼問題導致我們手忙腳亂，還好場上有指導老師及同學們在為我們加油打氣並提醒，如圖所示，最害怕的不是機器人壞掉或是對方加油團給我們的壓力，害怕的是無法達到他們對我們的期待與盼望，我們很感激可以參加這一次的比賽，因為再這一次的比賽當中，讓我們有一個永生難忘的回憶。

After this time competition, causes us also to realize originally pays how many to harvest how many, although does not have the goal which the means obtain us to want completely, but also thought if we do not have such payout, how possibly has such achievement, although we are very anxious on the field feeling also very much are afraid, the ultra fear robot has any problem to cause us to be thrown into confusion, on the field has fortunately instructs teacher and schoolmates in refuels for us inflates and reminds, like the chart shows, most is afraid is not the robot shatters perhaps opposite party refuels the group to ours pressure, the fear is unable to achieve them to our anticipation and the hope, We very grateful may attend this time competition, because middle this time competition, lets us have an eternal life unforgettable recollection again.