

參賽隊伍人員及機器人簡介

Team Member and Robot Introduction

組別：遙控組 自動組 指導老師：羅啟維
學校名稱：龍華科技大學 隊伍名：龍華科大資訊網路工程系
(School :) Lunghwa University Of Science And Technology
(Team name :) Lunghwa University Of Science And Technology of the Computer Information and Network Engineering

壹、參賽隊伍人員：

一、指導老師

羅啟維 老師

二、組員

丁坤福 同學/呂翊安 同學/李秉哲 同學/陳柏志 同學

貳、機器人簡介

一、構想與策略分析

構想：

車體: 以木製車體作為第一代自走車測試, 主要考量到木板容易取得且組合容易, 方便裁切在製作上容易許多。

夾具: 為了在平台 40 公分高上和低於 10 公分下的地板夾取娃娃, 所以製作了升降的功能, 讓夾具具有升降的功能。

Body: the wooden bodywork, as the first generation cars tested, mainly taking into account the combination of planks readily accessible and easy to facilitate trimming production a lot easier.

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Fixtures: on a platform 40 centimeters high and less than 10 cm below the floor gripper doll, so manufacture features of a lift, clamp has a lifting function.

策略分析: 在過關方面以第一關的重物抬起至指定地點和第二關的通過避障為主。

Policy analysis: in terms of clearance to lift heavy objects to specify the location of the first and second

二、機構設計

夾具部份: 夾具部分是以簡易方式來執行夾娃娃, 這種方式再程式撰寫上較為容易且不易出錯。

升降部份: 為了在平台 40 公分高上和低於 10 公分下的地板上夾取娃娃, 所以製作了升降的功能, 讓夾具具有升降的功能。

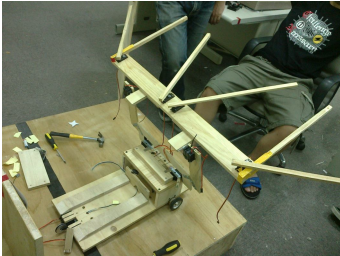
舉重物部份: 利用 2 顆伺服機、1 顆鋁輪加上一些零組件製作出舉起重物部分。

Fixture parts: fixture parts is performed in a simple way clip dolls, then on programs written in this way is easier and less error-prone. Lift parts: in order to to 40 cm high and the platform is less than 10 cm on the floor under the gripper doll, so manufacture features of a lift, clamp has a lifting function.

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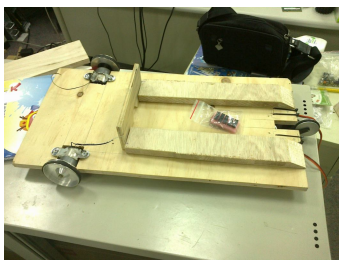
Part of weightlifting: using 2 servos, 1 aluminum wheels add some components to produce lift heavy parts.



三、輪子驅動設計

此次輪子驅動設計比起上次六輪設計已改為兩輪設計並以萬向輪為後輪, 此項設計除了方便轉向還可以改變前進方向是以前面或後面。

The wheel-driven design compared to the last six-wheeled design has been changed to two rounds of design and swivel-wheel, this design in addition to convenient steering can change direction is in front of or behind.

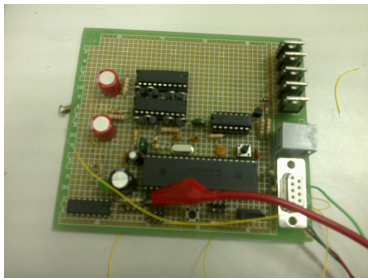


四、電路設計

自走車電路方面使用本校自行設計, 自行焊接的 Pic 30f4011 尋跡車之主控板修改而成, 主控板 CPU 運算能力 30 MIPS, 且此 IC 有 40 pin。

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Self-propelled vehicle circuit design yourself using our own
welding Pic 30f4011 tracing the car's main control panel to
modify, the main control panel CPU computing capacity 30 MIPS,
and this IC 40 pin.



五、感測器設計(遙控組無免填)

感測器方面是以前面五顆 CNY70 加上後面三顆,此設計是為了讓自
走車能夠擁有兩種方式前進。

Sensor is behind the front five CNY70 plus three, this design
is to allow cars to have two ways forward.



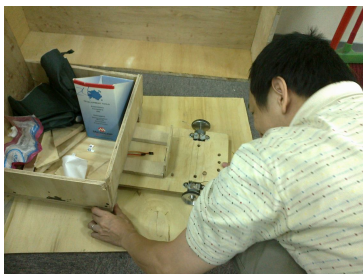
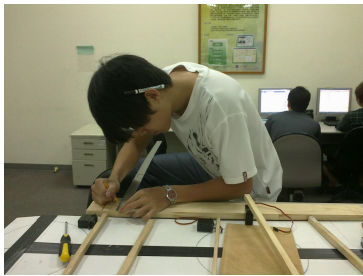
六、組裝、測試與修改

在組裝測試與修改方面,我們團隊嘗試了許多方法也想了許多不錯
的方法,尤其是在夾具方面,為了能夠快速組裝測試與修改所以使用
木頭這種材質。

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Final Assembly and testing and modification, our team has tried various ways to think about many good methods, particularly with respect to fixtures, in order to be able to quickly assemble a test and modify wood this material is used.



七、機器人創意特色說明

在舉起2.5公斤這部份,我們自行自作出能夠簡單舉起並無須花上許多金錢。在這部分我只用了2台伺服機、一個鋁輪,就能夠成功舉起。

以電影變形金剛裡的「柯博文」作為外觀上的參考,日後鋁製化後再以紅色與藍色作為主要顏色

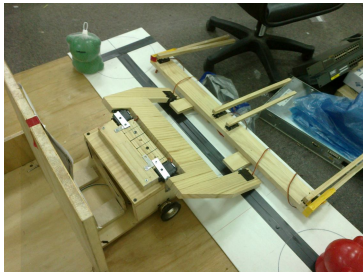
在升降部份我們是使用4台伺服機完成夾具升降,不僅可以夾起在40公分高的娃娃也可以夾起地面以下10公分的娃娃。

Lift 2.5 kg in this part, we can easily raise on their own and not have to spend so much money on. In this section I have only

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2 servers, an aluminum wheel, is able to successfully raise.

In the movie Transformers "Optimus Prime" as the appearance of the reference and future of aluminum, then to red and blue as the primary color in lifting some US lifting is done using 4 servo fixture, since I not only 40 centimeters tall dolls dolls can also be caught below ground level 10 centimeters.



參、參賽心得

指導老師

羅啟維：本校龍華科技大學資訊網路工程系已經是第二次參與 TDK 競賽，因為有了上次經驗所以在本次參賽有比較完整的準備，雖然在第一次實際比賽中發生線路斷掉，不過我們馬上解決問題並在第二次比賽中通過第二關的避障以及抬起第一關的重物。最後希望學校能有學生能夠繼續參賽。

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Qi Wei Luo: Lunghwa, University Of Science And Technology of the Computer Information and Network Engineering is involved in TDK race for the second time, because of previous experiences in the competition are better prepared, although the line break occurs in the actual competition for the first time, but we'll solve the problem and in the competition for the second time by the second obstacle avoidance and lifted first weights. Finally hope that schools will have students can continue to participate.

組員

丁坤福:我在本次參賽學習到很多東西包含程式、電路、機構,雖然這次參賽沒有得到名次,但是能夠學到東西才是有價值的,所以一直以來參加了許多比賽,而 TDK 是其中一場,希望在畢業之後,學弟能夠繼續加油。

Kun Fu Ding: I learned a lot of things included in this a proposed program, circuit, body, although the competition had not been ranked, but to learn something is of value, it has participated in many competitions, TDK is one field, hope that upon graduation, brother to continue refueling.

呂翊安:連續參加第 15 屆和第 16 屆 TDK,在這幾次競賽中學習到專業知識以及團隊合作,大家一起討論、一起合作,還有老師的幫忙,讓我們這個團隊成功完成作品並順利參加競賽,所以很感謝老師和各位隊員。

Yi An Lu: In the 15th and 16th in a row TDK, learning specialized knowledge to work as a team in this race, all discussions, working together, with the teacher's help, was successfully completed by our team works and successfully take part in the competition, therefore very grateful to the teacher and that team.

李秉哲:這次的競賽和上次相較之下,困難度高上許多,一開始是構思

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夾具,但是夾具是要很多時間上的測試,所以先對搬運落石著手,由於我們是資網系,所以對於機器方面等機構不是很熟悉,對於落石我們是才取飛機起落架的方式來將落石抬起,利用程式把落石抬到定位,至於避障關卡我們是利用超音波來感測圓柱,利用多次的測試來將機器人本體移動到定位,我們這次時間方面不是掌握得很好,浪費過多的時間再想如何夾取麒麟娃娃,而忽略了障礙關卡。

Bing Zhe Li: This of race and last phase than Xia, difficulties degrees high Shang many, a began is idea fixture, but fixture is to many time Shang of test, so first on handling falls stone to, because we is funding network Department, so for machine area, body not is familiar, for falls stone we is only take aircraft landing gear of way to will falls stone lift up, using program to falls stone lift to positioning, as refuge barrier points we is using Super Sonic to sense measuring cylindrical, using repeatedly of test to will robot ontology mobile to positioning, We are not master very well this time, wasting too much time to think about how the gripper Unicorn dolls, while ignoring obstacles hurdles.

陳柏志：本次競賽難度較為困難,尤其是第三關的爬上四十公分的平台還有第一關的抬起重物,所以因此能夠學到很多東西。此次作品完成與上次比起為較高,所以花費的心力也較為多,如果學弟能夠繼續完成的話那就真的太好了

Bo Jih Chen: Difficulty of this competition is very difficult, especially the third off to climb 40 cm platform also lifted first weights, so therefore can learn much. The work completed and the last for more than, so comparatively, if brother can continue to complete, it would have been really good