

Games 歷屆競賽 - 第十五屆 機器人百果山運動會 - 自動組資訊 112031 >

EDBLAB - OCT 16, 2012 (下午 06:21:02)

▶▶▶ 學校名稱/隊名：學 校名稱： 國立台北科技大學 隊伍名：逆轉奇機

嚴孝全 老師



國立台北科技大學機電學院工學博士，主要專長為機械設計、氣液壓控制、快速原型。目前在台北科技大學內成立氣液壓實驗室，提供有心學習者另一學習管道。

He is the Doctor of Engineering in National Taipei University of Technology. Main expertise is in mechanical design, gas hydraulic control, rapid prototyping.

He set up gas hydraulic laboratory, providing another pipeline for student.

張嘉堯

組長:



機構的製作人之一，負責協助製作機構的負責人製作機構，適時提供意見當製作上遇到瓶頸時，並且管理製作費用的支出、接洽比賽時接送的租車公司以及製作報告書等文書部份。而最得意的事就是能夠與隊友一起解決所遇到的瓶頸。

One of the production sector, responsible for assisting the institutions responsible for making production facilities, the timely provision of advice on encounter a problem when the production and management of production expenses, when the shuttle approached the game and the production of car rental companies and other instruments, part of the report . The most proud thing is to work with teammates to solve the bottleneck encountered.

林琮暘

組員:



負責的部分是電路，從未接觸過電子零件，對電路運作原理也是從課本上得知，實作經驗非常不足，經過比賽的磨練後有了相當程度的基礎；規劃主要的電路配置，最得意的事情就是把完整的將電路配置完成了,並且感謝 TDK 給予機會參與這項比賽。

Responsible for part of the circuit, never had contact with electronic components, principle of operation of the circuit is learned from textbooks, hands-on experience is very inadequate, after the game, after a considerable degree of tempering basis; planning the main circuit configuration, the most proud of what is to complete the circuit configuration is complete, and to thank TDK given the opportunity to participate in this competition.

曾國瑜

組員:



負責的部分是機構，為機構主要的負責人，設計大部分的機構，並且自製出許多高精準度的物件，常與負責程式的同學溝通各種機構的可能性及為機構除錯，最得意的是製作出許多高精密度元件及將機器人的所有機構製作完成。

Responsible for part of the body, the main body responsible for the design most of the body, and made many high-precision object, often to communicate with the students responsible for programming possibilities of various agencies and institutions debugging for the most proud of is the production of many high-precision components and the robot's body produced.

蔡文霖

組員:



負責的部分是程式，主要是透過撰寫程式傳送訊號給電路，以達到控制的目的，並思考如何作動。也是第一次接觸單晶片，從剛開始毫無頭緒，到逐漸了解其運作方式，進而開始思考如何使其動作，以達到要求。最得意的事為解決一個問題時，能夠與大夥們一同歡喜。

Responsible for part of the program, mainly through the writing program to send signals to the circuit in order to achieve control, and thinking about how to make move. Is the first contact with the single-chip, no idea from the beginning, to get to know it works, then start thinking about how it moves, in order to meet the requirements. The most proud thing to solve a problem, along with everyone are happy.

機器人特色 (ROBOT CHARACTERISTICS)

概說(Abstract)

此機器人可以利用其循線功能正確的判斷出要走的路線，並且當上階梯時能夠平穩且不會傷到循線裝置為原則進行動作，若地板為紅、藍、綠時，可以亮出相對應的燈色，而在循線時遇到球時，可以先判斷球的大小作出閃避或踢球的指令。

This robot can use its functions through the line to determine the correct route to go, and when on the ladder when a smooth line and will not hurt to follow the principle of action for the device, if the floor is red, blue, green, you can light the corresponding light color, and in having the ball through the line, can be made to determine the size of the ball or play dodge command.

機構(Mechanism)

為了能更有效使用空間，機構是一層層向上堆疊，一共分為 3 層，分別為底盤、踢球機構以及下階梯導輪，每一層間的連結是一致且相互影響的，並且由於機構外觀的關係，將我們的機器人命名為 BUG。

In order to more efficient use of space, bodies are stacking up layers, a total is divided into three layers, namely, chassis, body, and the next step play guide wheel, the link between each layer is consistent with and influence each other, and because of the appearance of agency relationship, our robot named BUG.

底盤(Chassis)

輪子部份位於底盤的兩端，我們用自製的軸連接輪子使輪子與馬達軸同軸，因為輪子已經被自製軸固定的，所以在軸上面裝上軸承能夠轉動，而軸承則是以 L 形鋁片固定，而 L 形鋁片則是與底盤的空心鋁管連接著；底盤後半部製作了放置電池的電池槽，並在電池槽以及電池上黏上魔鬼氈防止下階梯時因衝擊而脫落，而在底盤前端裝設循線機構及探色機構。

Part of the chassis at both ends of the wheel, we made the wheels so that the wheel shaft is coaxial with the motor shaft, the wheel has been made because the fixed axis, so the bearings on the shaft can be mounted above the rotation, while the bearing is based on L-shaped aluminum fixed, while the L-shaped aluminum and the chassis is connected to the hollow tube; chassis produced the latter part of the battery slot to place the battery and battery in the battery compartment and stick on the Velcro on the next steps to prevent loss due to the impact, installed in the chassis through the front-line agencies and explore color institutions.

控制(Control)

主電路板是控制核心，負責處理機器人的移動、路徑判斷、球及階梯的判斷及踢球動作，單晶片按照程式指令發出訊號，控制機器人完成動作。

The core of the main control circuit board is responsible for handling mobile robots, path judge, to judge the ball and ladder and play action, single-chip signal in accordance with program instructions issued to control the robot to complete the action.

機電(Mechatronics)

機器人的移動，由繼電器達成直流馬達的旋轉和停止。當機器人需要左、右轉時，2P 繼電器控制改變車輪旋轉方向，當機器人必須停止時，1P 繼電器控制停止車輪旋轉。

利用超音波、探色及循線感測器觸發完成所有指定動作。

Robot's movement, the relay reached by the DC motor rotation and stop. When the robot needs to left, turn right time, 2P relay control to change the direction of wheel rotation, when the robot must stop, 1P relay control to stop wheel spin.

The use of ultrasound, color and exploration through the completion of all specified wire sensors trigger the action.

其他(Other)

在所有的機構中最特別的是滑軌左右移動的裝置，我們利用叉接頭、鐵線及定滑輪達成左右移動的目的。

In all institutions the most special is that slide and move around the device, we use the fork connectors, wire and move around fixed pulley to achieve the purpose.

參賽心得(HIGHS AND LOWS)

參加了機器人的比賽帶給了我們許多人生從未經歷過的經驗，其中最重要的依然是團隊合作的精神，我們彼此常常迷失了方向，都要靠團隊的其他隊友的扶持才得以支撐下去，對於比賽一開始的熱忱會隨著壓力的消磨兒越來越鮮少，可是只要想到彼此都是這麼堅強的繼續著，也會想要跟著一起下去，參加比賽不僅是學習沒有的技術以及邏輯思考，更重要的是團隊合作的運行模式。

Took part in robot competition brought many of us have never experienced life experience is still one of the most important team spirit, and we were often lost its way, other players have to rely on the support team was Deyi sustain , the enthusiasm for the game will start with the pressure to spend more and more rarely children, but as long as the thought of each other are so strong continued, would want to go along with them, did not participate in the competition not only learn the technical and logical thinking, teamwork is more important is the operating mode.