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An Omnidirectional Electric Concept Car
and Its Intelligent Driving Control System

全方位電動概念車及其智慧型駕駛控制系統

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作品摘要

由於綠色能源與馬達的技術日益進步，使得電動車的市場近幾年蓬勃發展，在技術上也有很大的突破。4WID4WIS 電動車即 4 個輪子能夠各自獨立旋轉並且各自獨立驅動的電動車。此種機構應用於電動車能夠為駕駛人帶來相當大的便利性，第一，它的轉彎半徑很小，能夠做到零半徑轉彎；第二，由於輪子受機械聯動裝置的限制非常小，能夠做到將車子橫移的功能。為了能夠操作 4WID4WIS 電動車，此計劃開發出一套專屬的駕駛系統，而且容易上手，能夠靈活操作。之所以能夠讓駕駛人能夠容易上手，此駕駛系統是基於傳統汽車的駕駛模式設計，而不是開發出一套全新的需要全部重新學習的系統。

另外，在不遠的將來，自動駕駛系統將會是未來車市的一大賣點，此企劃除了開發一套適用於 4WID4WIS 電動車的手動駕駛系統，同時也開發一套適用於它的智慧型自動駕駛系統。此自動駕駛系統不僅有如傳統汽車一樣的移動能力，還具備了橫移的能力，以及能夠發揮此電動車轉彎半徑小的能力。

Due to the advancement of technologies of green energies and electric motors, the market of electric car becomes more flourish and its technologies have very great breakthrough. 4WID4WIS electric car means the four wheels of electric car can drive and steer independently. This mechanism applied in electric car can brings better convenience for drivers. First, its turning radius is very small so that it can implements zero-turn radius. Second, it has the lateral moving ability because of its constraint restricted by mechanical linkage is very small. In order to drive the 4WID4WIS electric car, this project develops an exclusive driving system for it. This driving system is easy and flexible to drive owing to it is designed by traditional car driving system instead of an entirely new design so that drivers do not need to relearn the whole system.

In addition, driverless technique will be one of the selling point in the near future. Except the manual driving system in this project, we also develop an intelligent driverless driving system. This driving system not only can move like traditional car, but also can move laterally and it can exhibit its capability of small turning radius.