The "iWheel": A Motorized Assisting Device for Manual Wheelchair

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Many elderly and disabled people get around with the help of wheelchairs everyday. Manual wheelchairs are inconvenient when going up-hill and when used by the physical weak. On the other hand, electric wheelchairs also have disadvantages. They are expensive, bulky, heavy, and most cannot be folded and stored in cars. When an electric wheelchair runs out of battery, it cannot be driven manually. To overcome the above problems, we have invented the “iWheel”, a motorized assisting device which converts a conventional manual wheelchair into an electric wheelchair in seconds! It is attached underneath the wheelchair and can be installed and detached easily without any tools. It has adjustable frame to fit into most wheelchairs without any modifications. The user controls the wheelchair using a simple joystick but can also navigate it manually if required. T he “iWheel” uses the JYQD control board as the bridge between Arduino and in-wheel motors, which receives the signal from the Arduino and converts it into signal for the brushless motor. The device is powered by two 12V rechargeable lithium batteries. It consumes low energy. With a 2200mah battery, “iWheel” can travel for 1 hour at 4 km/h. It can climb uphill at a speed of no less than 3km/h and can safely brake on uphill and downhill conditions. “iWheel” meets all international standards of electric wheelchairs (ISO7176 – The Standards Aids of Wheelchairs). It is hoped that the revolutionary “iWheel” can change the lives of many wheelchair users especially those who are financially in need.

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