

CARRT Researchers Invent a Universal Android-Based Kit for Wireless Control of Wheelchairs

The need to control a powered wheelchair using only body motion adds many benefits to power wheelchair users. People with upper limb weaknesses or limited motion, and amputees that have lost their arms would be able to control their wheelchair using their body motion or residual limb without assistance. Those who desire to play sports would have their hands free to play the game. This technology is designed to be safe to operate, easy to use, and be available for a wide range of models by different powered wheelchair manufacturers. Programming the accelerometers in the android phone, coupled with a wheelchair motor control system, has allowed the wheelchair user to control wheelchair motion hands free.

An Android App is created to utilize the phone's sensors and Bluetooth technology to control the motor control system wirelessly. The Android phone can be placed on the person's body, residual limb or head and drive the wheelchair by simply leaning the phone in the direction of the desired motion. The phone operates a control box which is interfaced to the current wheelchair motors. The control box, when turned on, controls the wheelchair in a similar manner as the manufacturer's control box would normally do. When turned off, the wheelchair operates using the manufacturer's control system.

