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Abstract
Most medical assistive devices on the market can’t meet the needs for the hemiplegics who have trouble to move with a single hand and a single leg. This research aims at designing power assisted pedaling wheelchair, so we take the users’ physical features, manipulation capabilities and living needs into consideration to make its design specification. Our goal is to make a wheelchair with direct operation, precise motion, confortable drive, and labor saving to avoid strain-induced injuries. There are four systems in the wheelchair: driving system, turning system, power assisting moving, and transmission system. The user maneuvers the moving direction with one hand and push the lever to drive the wheelchair with one leg. The power assisting system is used to provide assisting power based on the detected pedaling torque. And the transmission system is capable of forward, neutral, and reverse to satisfy different needs. A prototype power assisted pedaling wheelchair is made in this research. It provides mobility solutions for the hemiplegics. Moreover, it helps the users in rehabilitation or even strengthen their cardiopulmonary function so it can help the users’ independence and promote their life quality!
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