Adaptive Elevation Device for Wheelchairs (AEWheelchair)

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Worldwide, close to 15% of the population (more than 1 billion people) have some sort of disability, where close to 70 million of them need a wheelchair to move around. However, when they need to reach items that are elevated in height, they experience difficulties since wheelchairs are not designed for that purpose. AEWheelchair is a functional tool that allows greater mobility and accessibility for performing daily tasks independently. Its main purpose is to develop a prototype with an electrical elevation system that is adapted to wheelchairs so people are able to reach items that are located high up. To develop the prototype, an investigative exploration was performed of the needs of people with a walking disability. Based on that exploration, possible designs were suggested then work continued with building the chosen design to scale using the CAD Solid Works software program. Once this stage was finished, the prototype was submitted to a series of safety parameter evaluations. Likewise, it was determined that AEWheelchair needs to be able to lift a person weighing 100 kilograms in ten seconds. In order to let the user being able to reach items that are located at a height that is considerably above the ground, the device must be elevated at a height of 25 centimeters for an ideal funtion.

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