Project Maverick: An Omni-Directional Robotic Mobility System

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According to a U.S. Census Bureau report, nearly 40% of people age 65 and older have at least one disability. Of those 15.7 million people, two thirds have difficulty walking. People who cannot walk unassisted, including those with Parkinson's disease or muscular dystrophy, may use a walker as an assist and eventually a wheelchair. Both of these have their deficiencies. A walker requires its user to balance and push along. Wheelchairs provide physical respite but often, muscular atrophy sets in. A wheelchair is also difficult to operate in tight spaces while a rigid walker does not offer a suitable solution either because its user must carry it around. This is where Project Maverick comes in: an omni-directional robotic system that provides mobility for users in a standing or sitting configuration by moving in any direction with an intuitive control system. Project Maverick is designed to have extreme maneuverability combined with ease-of-use. It accomplishes this by using a new and innovative drive system containing 4 wheels and 8 motors. Each wheel has two independently-controlled motors for steering and driving, providing maximum flexibility. This system is simple and modular, built out of 4 identical wheel assemblies, and is economically feasible to be mass produced. Project Maverick utilizes a flexible Linux-based controller programmed in Java that allows the implementation of advanced features, such as collision detection and autopilot through tight doorways. The main user input device is a 6-axis 3D controller, providing a simple and intuitive driving system. Project Maverick is a mobility aid that improves people's life not only from a functional perspective, but also from an emotional one. Because the worst thing about being disabled is feeling disabled.

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