

# Multiple Use Wheelchair Airbag System

**Status:** Filled

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## Project Description

Wheelchair accidents cause injuries with short and long-term consequences (e.g., bed rest, hospitalization, additional disabilities). The medical and recovery expenses of these accidents impose significant economic and social burdens to the patient and the healthcare system (often between \$25,000 and \$75,000). A low cost and reliable wheelchair safety device to prevent injuries from falls will greatly improve the quality of life for the wheelchair users, provide peace of mind for their families and result in economic benefits for the healthcare system. The goal of the proposed project is to accelerate the development of a device for preventing injuries associated with wheelchair falls using a novel, low-cost, simple to manufacture, low maintenance, light, and multiple-use airbag system. The specific objectives of this project include: design optimization, extending the wheelchair falls detection system to cover multiple fall scenarios, Integrating the components into a functional and near-commercial ready prototype, with complete and reliable mechanical and electronics systems; and evaluate the performance of the wheelchair airbag system using computer simulations and experimental testing using impact test dummies, under various wheelchair fall scenarios and for different types of injuries.