

Automated Bus Ticketing System for Enhancing Accessibility for Persons with Disabilities

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Abstract

Equitable access to public transportation poses significant challenges for individuals with disabilities, including those with visual impairments, mobility difficulties, and learning disabilities. Barriers such as lack of autonomy, inefficiency, and inconvenience disproportionately affect these individuals, who require clear communication and simplified processes to commute effectively. This study introduces an innovative RFID-based bus ticketing system aimed at enhancing inclusivity and fostering independence for passengers regardless of their physical abilities or social class. The proposed system provides each passenger with an RFID card to automate travel data recording and transmission, replacing traditional ticketing methods and manual expense tracking. This automation reduces both cognitive and physical barriers to transportation. For visually impaired users, the system integrates voice dialogue features, delivering real-time ticketing and travel information in an accessible and user-friendly manner. It also caters to individuals with Asperger's syndrome by offering clear and straightforward communication to ease interactions. Results demonstrate improved boarding efficiency, enhanced ticketing accuracy, and a more independent travel experience for disabled passengers. By leveraging radio-frequency identification technology, the system not only addresses accessibility gaps but also counters discriminatory practices and optimizes user experiences. This research advances inclusive transportation solutions, promoting equality and self-reliance for passengers with diverse needs while paving the way for more equitable public transit systems.

Keywords: *Automated ticketing, Disability accessibility, RFID technology, mobility impairments, Public transportation*