

## **Humanoid Robots for Assisted Living: Developing Intelligent Navigation and Object Manipulation Systems**

This project aims to enhance the capabilities of humanoid robots in assisting individuals in living environments. This involves developing advanced navigation and object manipulation systems to enable robots to navigate complex indoor and outdoor spaces, recognize and manipulate various objects, and provide reliable assistance.

Current assisted living robots face challenges in navigating cluttered and dynamic environments, recognizing and manipulating objects, and effectively assisting users, hindering their widespread adoption.

This research is crucial as it meets the growing demand for sophisticated assisted living solutions. Improving humanoid robots' navigation and object manipulation abilities can significantly enhance their support for individuals with physical impairments, improving their quality of life and independence.

Expected outcomes include advanced navigation algorithms for autonomous robot navigation, tailored object recognition and manipulation techniques, and integration into existing robots to showcase their potential in enhancing users' lives.

The research process involves a literature review to identify existing techniques, followed by the development, testing, and integration of advanced algorithms and techniques in simulated and real-world environments. Evaluation against current solutions will assess their performance and effectiveness.

However, the research focuses solely on navigation and object manipulation, overlooking important aspects like social interaction and emotional intelligence. Further research is needed to address these aspects for successful deployment in assisted living environments.

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