

SMART CANE TECHNOLOGY: PROPOSING A MODEL REAL-TIME DETECTION AND NAVIGATION

ABSTRACT

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Smart Cane Technology aims to address key challenges in assistive mobility, such as the improper use of support devices and the stigma associated with mobility aids. This innovation is designed for individuals with minor injuries, poor balance, or leg pain. To enhance user safety, the Smart Cane is equipped with real-time smoke and water detectors, allowing users to navigate various environments with greater confidence and independence. This study utilizes a quantitative descriptive research method with purposive sampling. A total of 10 respondents—5 Computer Engineers and 5 Electrical Engineers—were surveyed to assess the Smart Cane Technology in terms of procedural methodology, durability, functionality, quality, and presentation. A survey questionnaire was used as the primary instrument, and a t-test was conducted to determine if significant differences existed between the two groups' assessments. The results showed that the Smart Cane was rated as Highly Acceptable by Computer Engineers and Acceptable by Electrical Engineers across all evaluated criteria. The mean score from Computer Engineers was 3.43 with a variance of 0.009, while Electrical Engineers recorded a mean of 3.00 with a variance of 0.158. The computed t-value was 1.226, which is lower than the t-critical value of 1.963 at a 0.05 significance level. These findings support the hypothesis that there is no significant difference in the acceptability assessments between the two groups regarding procedural methodology, durability, functionality, quality, and presentation. The findings confirm the overall acceptability of the proposed Smart Cane model, although areas for improvement were identified. Future enhancements should focus on improving sensor accuracy and reliability, optimizing component placement, increasing battery efficiency, and ensuring that the design remains user-friendly. Incorporating real-time sensor feedback is essential to maximize both safety and usability. Strengthening these features will enhance the cane's potential to promote mobility, independence, and confidence among users.

RECOMMENDED CITATION

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