

Technical Abstract

Title: Assembly Advisor – An Integrated Prompting and Verification System that Increases Job Opportunities for People with Intellectual Disabilities

CreateAbility will research and develop natural support mechanisms for people with intellectual disabilities (consumers) that facilitate greater opportunities and independence in employment settings, without compromising quality. This project will demonstrate the technical merit, feasibility and cost effectiveness of combining state-of-the-art portable wireless technology and sensor technology with an innovative approach to develop the first semi-automated supervisory system designed to guide the consumer through the assembly process and verify the quality of the consumer's work. Assembly Advisor has the ability to detect the status of specific factors related to the job task, and then dynamically adjust the delivery of task prompts to properly coach the individual with an intellectual disability based on these factors. This greatly increases the jobs available to them and facilitates independence while maintaining quality.

Specific objectives for Phase I are: 1) determine end user requirements, 2) develop a proof-of-concept prototype of the Assembly Advisor system, and 3) perform a usability analysis with actual users. A comparison of the user's sense of independence will also be performed between Assembly Advisor and the traditional approach of human supervision.

Phase II will involve further design, development, and testing to prepare for commercialization of the system.

Anticipated Results and Implications of the Approach

Assembly Advisor will enhance employment opportunities. The built in natural support mechanisms promote independence, enhance self-esteem, and create opportunities for self-direction in a respectful, non-invasive approach. Common tasks performed in a job setting can be accomplished without assistance and without compromising safety or quality. The broader impact of performing more complex job tasks independently 1) creates the foundation necessary for people with intellectual disabilities to obtain employment, further enhancing their sense of independence and value, and 2) supports the Welfare to Work Initiative of the current and previous two administrations.

Potential Commercial Applications / Anticipated Benefits

The potential commercial applications of the Assembly Advisor system are substantial, as this project targets a large potential workforce (> 12 million people), and there is considerable pent up demand by employers. The Assembly Advisor approach can be applied to coach employees / consumers in various employment settings such as main stream production facilities, sheltered workshops, supported employment, or work crews. With Assembly Advisor, the following tasks are now available to this population: 1) in multi-step assembly operations, such first-aid kits and MREs (Meal-Ready-to-Eat) that support the US military, 2) the assembly of electronic or mechanical subassemblies, 3) the assembly of direct mail or information packets, 4) performing janitorial services, 5) restocking operations, and 6) security and building surveillance positions.