EYE-GAZE-ENABLED ASSISTIVE ROBOTIC STAMP PRINTING SYSTEM FOR INDIVIDUALS WITH SSMI

THIS WORK INTRODUCES AN ASSISTIVE TECHNOLOGY UTILIZING AN EYE-GAZE CONTROLLED ROBOTIC ARM FOR INDIVIDUALS WITH SEVERE SPEECH AND MOTOR IMPAIRMENT

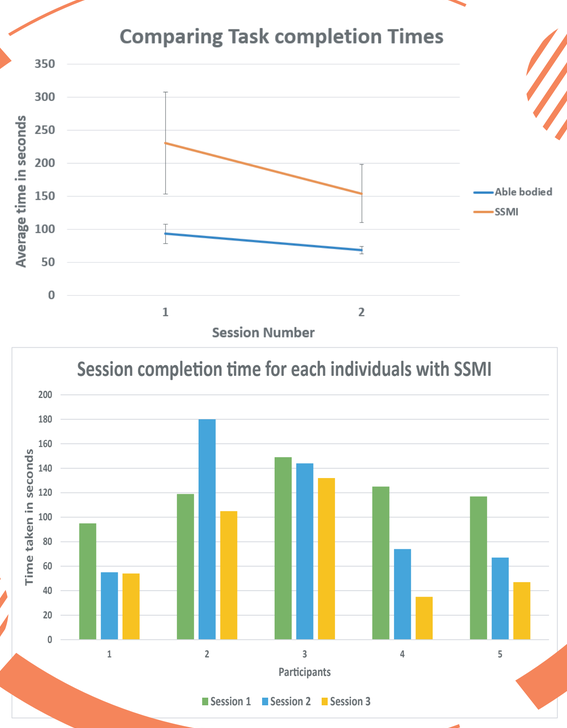
* User Interface which enables autonomy in stamping through selectable designs, printing location choice, and a print button.
* Precise spatial mapping from pixel to robot workspace.
* Overstamping algorithm to avoid redundant stamping.

The article overviews,

* A gaze-controlled user interface, featuring a real-time robot workspace video feed, complemented by a personalized user interface tailored to individual user preference.
* Comparing average time taken for two successive stamping tasks between able-bodied and SSMI individuals.

(a) (b) (c)

(d) (e) (f)



* Improved Performance for SSMI Users: Compared to higher initial values average time and standard deviation for SSMI users decreased significantly in the second session, with a 33.2% reduction in average time and a 42.8% reduction in standard deviation.
* Overall Efficiency: The average time for all users to complete the task was less than 111.165 seconds, indicating the system's efficiency across both able-bodied and SSMI users.

CONCLUSION

* A cost effective eye gaze control robotic system for rehabilitation of individuals with SSMI.
* Future improvements will concentrate on refining robotic arm end effector to improve precision and broaden user choices.

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