Visual and Tactile Perception in Deep Space: Accommodating a reduction in vision

AUTHORS

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AFFILIATIONS

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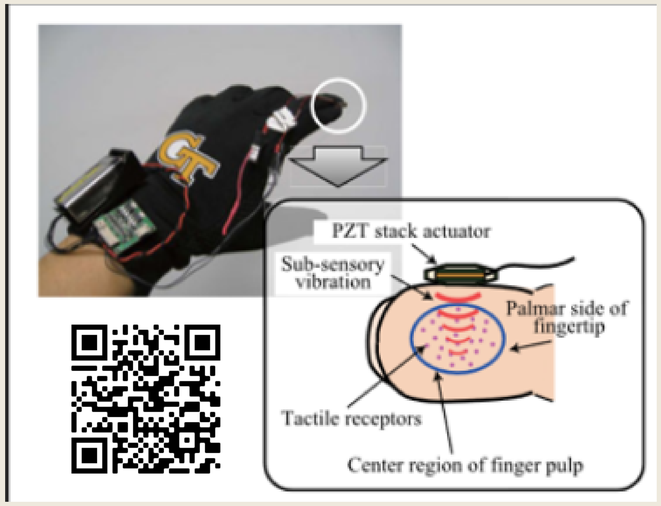
01. Introduction

The ability to operate, perform tasks, and maintain equipment is paramount to survival in deep space. Spaceflight associated neuro-ocular syndrome (SANS) affects 70% of astronauts making it a prevalent and necessary problem to tackle.



02. Objective

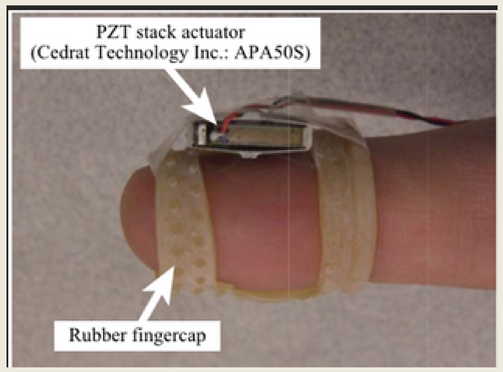
SANS presents a barrier to effective work by decreasing visual perception. Until further research is performed, ways to mitigate this challenging phenomenon require creative solutions.

03. Methodology

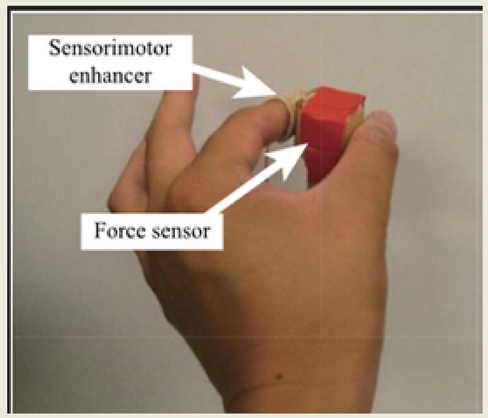
Adapting tests currently in use on the ISS to incorporate new technology

- GRASP Test
- GRIP Test
- Wearable Technology

04. Sensorimotor Enhancer



Stack Actuator inside of the glove



Force sensing test

05. Applications

- Materials based code
  - Development of a textual system where communication is accesible in low light / no light environments
- xEMU Adjustments
  - Incorporate sensorimotor enhancers into the gloves for increased sensation, possibly in tandem with haptic feedback

06. Conclusion

This technology has the ability to easily be incorporated into existing infrastructure making it an ideal method to establishing an alternate means of communication in environments where vision could be impacted permanently.

Until more research is performed on SANS, planning for feasible interim solutions via enhancement of another sense is possible.

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Citations

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