

HUMAN SPACEFLIGHT SYMPOSIUM (B3)  
Interactive Presentations (IP)

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MULTISENSORY TECHNOLOGY IN SPACE EXPLORATION

**Abstract**

The senses we call upon to interact with technology are still very limited relying mostly on visual and auditory senses. The grand challenge and vision of our research is to gain a rich and integrated understanding on touch, taste, and smell experiences for interactive technologies in the context of space exploration.

A common misconception is that all extra senses, especially taste and smell, integrated into technology are just superficial and cosmetic entities, with no real need for it. However, we know that sensory stimulation is a fundamental human need we often take for granted on Earth, but we will be deprived of those sensory experiences in outer space, which will radically influence the personal and emotional wellbeing of a person, and consequently the success of a mission.

While previous studies indicate changes in visual perception in normal gravity versus microgravity conditions; colours, for instance, appear more intense in absence of gravity and guide visual interface design of space habitats, we only start to understand the impact of microgravity on our other senses. We do not yet have comparable insights for our sense of touch, taste and smell in outer space, which could guide the design of innovative technologies and interfaces.

Hence, we see it not only worthwhile but necessary to push multisensory design forward to this new frontier. We aim to determine what sensory experiences we can design for in the context of human space explorations and long-term spaceflights in order to advance and transform the way humans will interact with and experience technology through all their senses in the future.