

The Importance of the Sense of Touch in Virtual and Real Environments

By: Gabriel Robles-De-La-Torre

Emilio J Macias

Ellie Niroumand-Rahimi

Qiwei Wu



What does the paper say?

- Importance of the sense of touch
 - Consequences of losing it
- Mr. Waterman's Case
- Relation between sense of touch and VE



Mr. Waterman's Case

- Loss of sensation from the neck down
- Vision to compensate the missing sense of touch
- Symptoms
 - Inability to sense limb movement and position
 - Loss of precision particularly in the hands
 - Inability to communicate through body language



Is It a Good Paper?

- Yes! It is a good paper
- Unexplored research area
- What's worse losing your sight or losing your sense of touch?
- Both very important



Why is what it says important in relation to Virtual Environments?

- When using an interface that provides poor sense of touch, is analogous as experiencing Mr. Waterman's illness.
- Example of surgical simulator – robotic surgery
- But users must have full control of their bodies
- When using an interface
 - Full degrees of freedom but with a minimal action (just a fingertip!)



Does the paper contribute something new?

- Unexplored area of research
- The perceptual role of force-feedback is in itself a relatively new area of research
- Contributions:
 - Knowledge of human capabilities
 - Applications that support the sense of touch



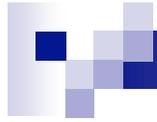
After the Paper?

- Many books and articles used this paper as a base for their research.
- Examples:
 - Force-feedback Joystick
 - Manipulating mechanisms
 - Haptic feedback in robot-assisted minimally invasive surgery
 - A Tactile Emotional Interface for Instant Messenger Chat



Conclusion

- Much work remains to be done on somesthetics and also on its applications to HCI and VEs.
- It's possible that the new and surprising somesthetic or closely related capabilities remain undiscovered.



Questions

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