Enhance Presence in Telepresence Robot with Nonverbal Communication

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Terminology

- **User**
  - The person who uses the medium to project his presence

- **Medium**
  - The technology involves to bring across the user’s presence

- **Remote Space**
  - The environment where the Remote-agent and interactant co-exist

- **Remote-agent**
  - The entity that is presenting the user in the remote space

- **Interactants**
  - The other beings who are co-located with the medium.
Frictional Examples

- Virtual Reality
  - Remote Agent (user)
    - Virtual agent
  - Remote Space
    - Virtual environment
    - Virtual objects
    - Virtual agent (might be human control)

- Telepresence robot
  - Remote Agent (user)
    - Robotic platform
  - Remote Space
    - Real environment
    - Physical objects
    - Humans or robotic agent
Current State of Telepresence robot
What is telepresence?

• A few definition
  – **Immerse** into the remote space in teleoperation system. ¹
  – “**Being there**” in a virtual environment. ²
  – **Use of technology** to connect the user’s senses and state of mind to a mediated content without noticing the use of the mediation. ³
  – Empowers humans to **explore and interact** at a distance. ⁴
  – Recreate the **closeness a remote person** would have if s/he were physically present ⁵

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3. G. Pettey, Virtually Reality, 2010
5. K. Tsui, Performance metrics for intelligent systems workshop, 2012
What is telepresence?

- Telepresence
  - Sense of “Being there”
- Presence\(^1\)
  - Immersion
  - Transportation
  - Social actor within medium

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Social Presence

• Some of the definitions include:
  – Degree to which a person is perceived as a “real person” in mediated environment. ¹
  – Sense of “Being together” with others²
  – Awareness of the various communicating participants³

1. C. Gunawardena, American journal of distance Education, 1997
Social Presence

- Social Presence
  - Sense of “Being Together”

- Presence
  - Social Richness
  - Realism
  - Medium as a social actor

Nonverbal Communication

- Some of the definitions include:
  - Expressing emotion, conveying interpersonal attitudes, presenting one’s personality to others and accompanying speech.\(^2\)
  - **Immediacy, status** and responsive\(^3\)

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1. M. Argyle, Bodily Communication, 1988
2. A. Mehrabian, Silent messages, 1981
Social Presence and Nonverbal Communication

Social Presence
- Co-presence
- Behavior Engagement
- Psychological involvement

Nonverbal Communication
- Physical Appearance
- Chameleon effect and Motor interference
- Facial Expression, postures and gestures

References:
2. H. Knapp, Nonverbal Communication in Human Interaction, 2002
7. A. Mehrabian, Silent messages, 1981
Conclusion
Question and Answer

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