Virtual Human Research at USC’s Institute for Creative Technologies

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Images and videos from USC Institute for Creative Technologies
Virtual Humans

Autonomous virtual characters that have meaningful social interactions with human users

- Reason about environment
  - Understand and express emotion
- Communicate through speech & gesture
- Play the role of teachers, peers, competitors
What’s the point?
Computer Science Motivation:
Challenge problem to advance artificial social intelligence

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- User recognition
  - What is she saying?
  - What is her expression?
  - What is her posture?

Computer Science Motivation: Challenge problem to advance artificial social intelligence

- User understanding
  - What does she want?
  - What does she feel?
  - Is she lying?
  - What will she do next?

- User influence
  - How to establish rapport?
  - How to seem trustworthy?
  - How to evoke emotion?
  - How to lie?
  - How to win?
Psychological Motivation: Tools to advance theories of human social cognition

de Melo, Carnevale, Read and Gratch. Reading people’s minds from emotion expressions in interdependent decision making. Journal of Personality and Social Psychology, 106(1), 2014, pp. 73-88
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- Virtual Confederates
  Allow systematic manipulation of
  - Race
  - Gender
  - Accent
  - Expressions
  - Behavior


Application Motivation:
Unique capabilities to advance education and health
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How to build it?
Data or Theory?

e.g., Rapport Agent

Capture

Learning (LDCR)

Prediction Model

Capture

Morency, de Kok and Gratch. A Probabilistic Multimodal Approach for Predicting Listener Backchannels. JAAMAS, Springer, 20(1), 2009, 70-84
Data or Theory?

- I'm biased towards theory
- A neural network is not a theory
  - Offers limited explanatory value
  - Challenges in generalizing to other contexts

- Theories have certain advantages
  - Emphasize underlying mechanism
  - Have good empirical support
  - **Indicate how to bring about change**
Data or Theory?

- Data tells us about the world as it is
- Useful if want to recreate reality
  - e.g., make virtual humans that are identical to real people
- I'm more interesting in creating something better than people
- Theories can point the way
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Thank you