Listening Skills Assessment through Computer Agents

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Towards automated SST (Social Skills Training)

1. Introduction

- SST is a general psychosocial treatment through which people with social difficulties can obtain appropriate social skills.
- Previous works conducted SSTs using computer agents, for instance, in the contexts of interview, public speaking, and emotional regulation [Hoque et al., 2013, Zhao et al., 2017, Tanaka et al., 2017].
- Most automated SSTs focused on users’ speaking skills.
- We analyzed a part of the assessment of listening skills.

2. Computer agents

- MMDAgent was used as the computer agent.
- Four Japanese people (two males and two females) created the agent’s spoken sentences.
- We created three types of tasks:
  1. Speaking: The user tells a recent memorable story to the computer agent.
  2. Listening 1: The user listens to the agent’s recent memorable story. This supposes casual social small talk.
  3. Listening 2: The user listens to a procedure of how to make a telephone call. They are designed for a more serious situation such as job training.

3. Data collection

- 27 participants (6 females and 21 males, with a mean age of 25.1, SD: 2.13)
- We conducted the Social Responsiveness Scale and the Big Five Personality Test.
- We recorded interaction between computer agents and participants.

4. Evaluation based on correlation

- Feature extraction: Eye fixation, manual video annotation (use ELAN).
- Two licensed clinical psychologists rated listening skills by watching videos (ground truth: 1 to 7).

- Multi linear regression with selected features based on AIC can predict an unseen user’s listening skills with 0.45 (Listening 1) and 0.47 (Listening 2) correlation coefficient.

5. Discussions and future works

- The correlation coefficient of two raters was 0.46 (Listening 1) and 0.66 (Listening 2).
- Our prediction model achieved similar prediction in Listening 1.
- Integrate our listening-skills assessment with timing into the automation framework.
- Test it on people with autism spectrum disorders.