

# FreeTalky: Don't Be Afraid!

## Conversations Made Easier by a Humanoid Robot using Persona-based Dialogue

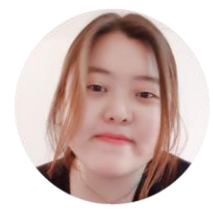


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Natural Language Processing  
& Artificial Intelligence



### Overview

- **Xenoglossophobia**
  - Foreign language anxiety; a consistent and irrational fear revolving around foreign languages
  - Exposure therapy with FreeTalky – NAO robot replaces the human to relieve the anxiety of the user
- **Main Modules**
  - Speech recognition
  - Persona-based dialogue system
  - English grammar error correction
  - Humanoid robot
- **Contribution**
  - Propose FreeTalky, where users can receive feedback on English grammar errors and improve their English conversation skills
  - Content of multi-turn conversations can be adaptively altered to suit the users and provide diverse conversational experience to the users with a persona dialogue system
  - Possible to alleviate the psychological pressure experienced by people suffering from xenoglossophobia using the NAO robot

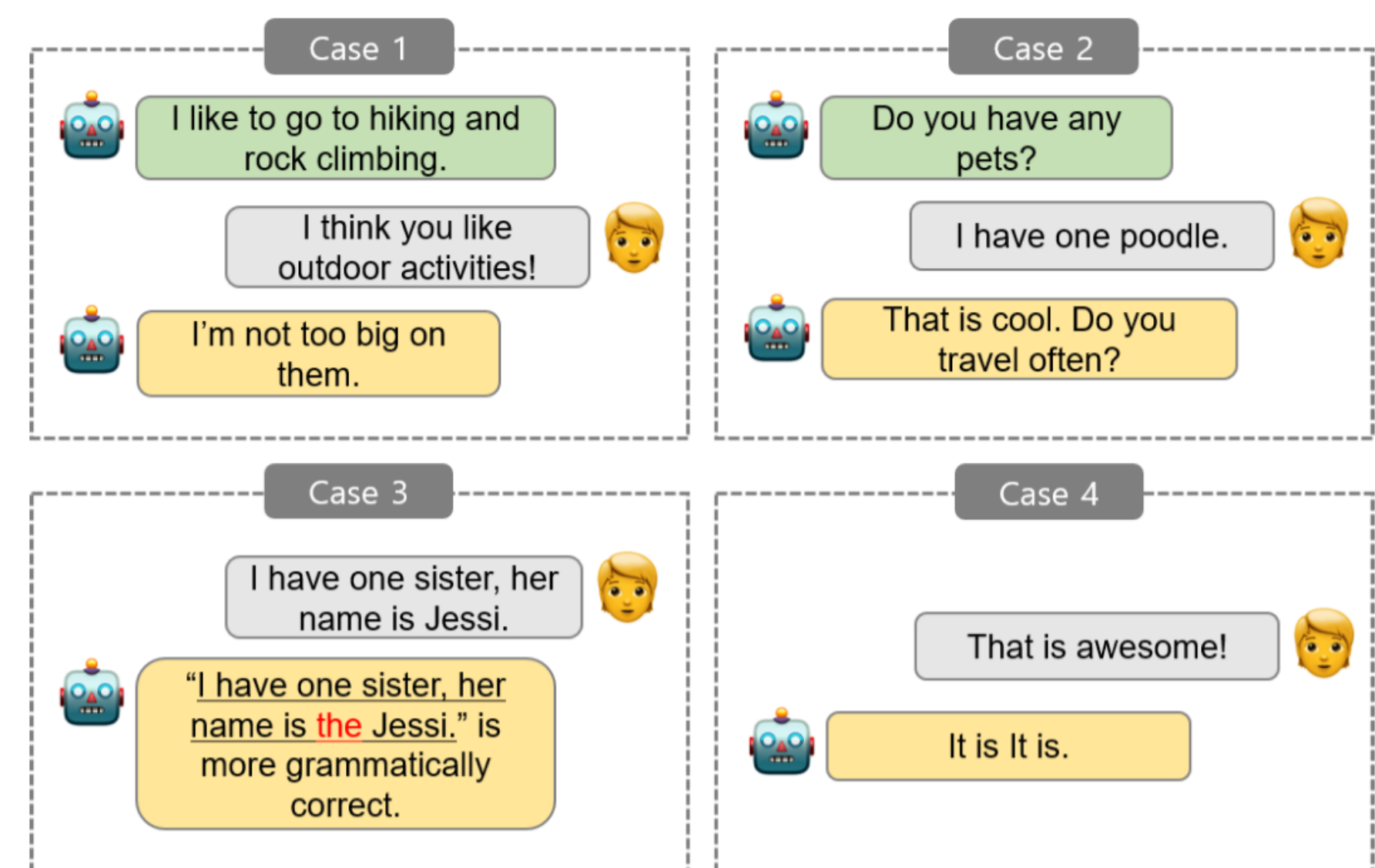
### Qualitative Analysis

#### • Example conversation

Example conversation with FREETALKY		
FreeTalky:	Hi, I am NAO. Please choose the number between 1 to 3 and tell me, then I will set my personality and tell you about my persona!	(01)
User:	Two	(02)
FreeTalky:	Persona setting is done. Let me introduce myself. I live in colorado. I like to go hiking in the spring. My favorite activity is rock climbing. I am a mechanical engineer.	(03)
FreeTalky:	Now you can have a conversation with me! If you want to finish the conversation, just say bye.	(04)
User:	Hi how are you?	(05)
FreeTalky:	I am doing great! I just got back from rock climbing. What are you up to?	(06)
User:	Wow... That's awesome. I am going to study English.	(07)
FreeTalky:	I am in colorado, we are going to go hiking sometime soon.	(08)
User:	I want visit Colorado. I think you like outdoor activities!	(09)
FreeTalky:	I do, but I'm not too big on them.	(10)
User:	I see. You.. engineer?	(11)
FreeTalky:	Yes, I am a mechanical engineer.	(12)
User:	Okay.. It's nice to meet you. Bye.	(13)
FreeTalky:	Conversation is done. Do you want to get grammatical feedback?	(14)
User:	Yes please.	(15)
FreeTalky:	Okay! You said, "I want visit Colorado", but "I want to visit Colorado", is a more grammatically correct expression. You said, "You engineer?", but "Are you an engineer?" is a more grammatically correct expression.	(16)

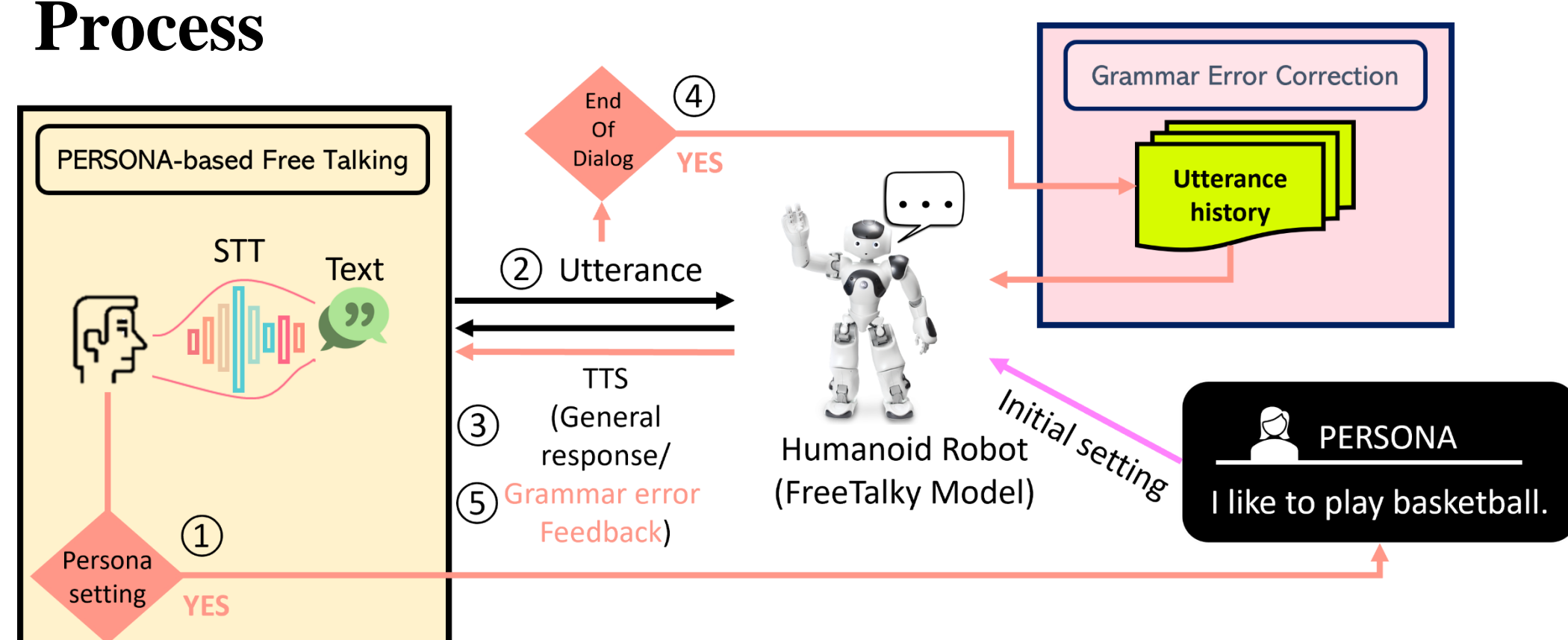
- Generates persona-based answers (08, 14)
- Has the ability to ask an additional question (08)

#### • Error Analysis



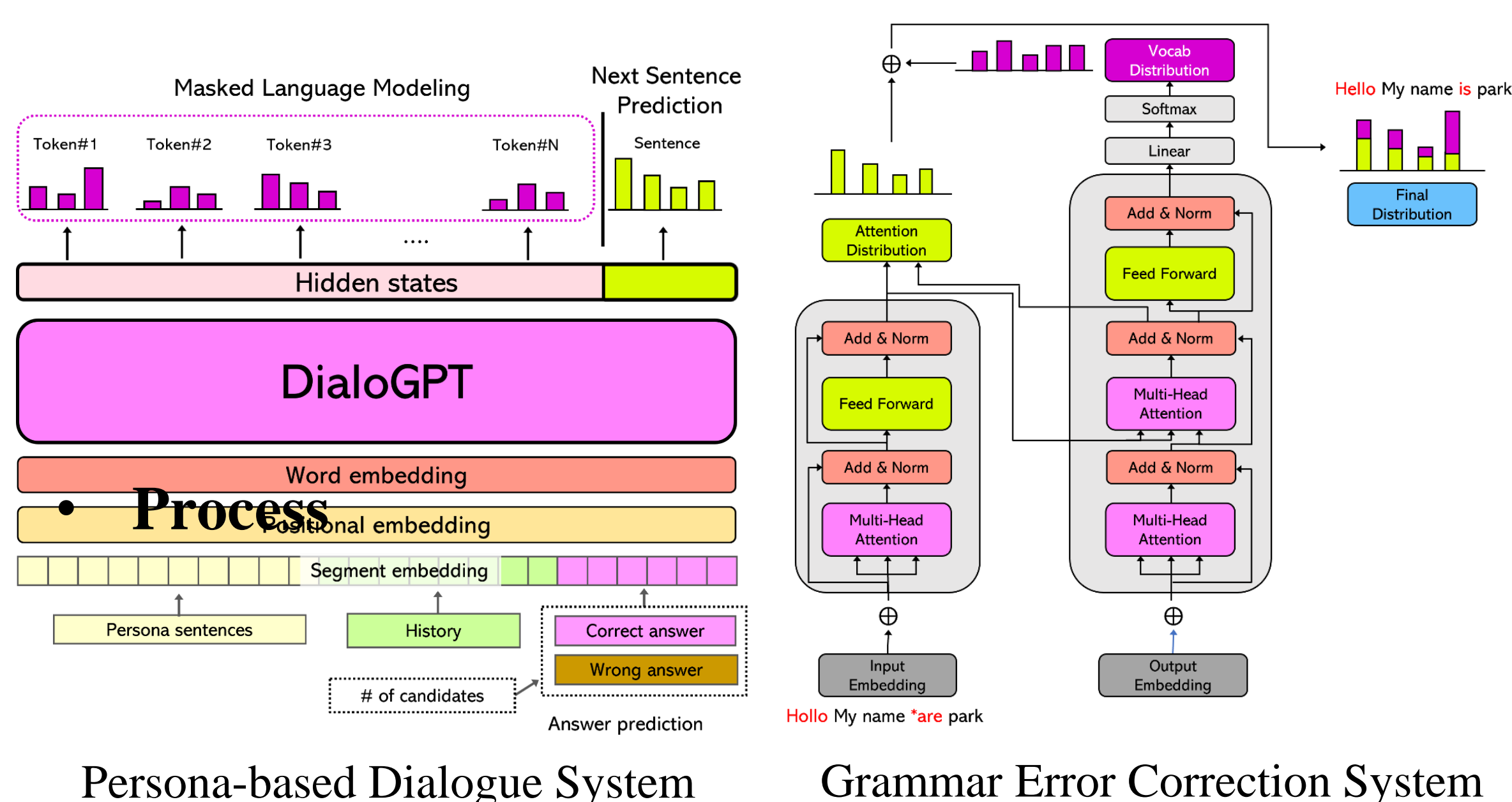
### FreeTalky

#### • Process



1. User sets the persona of the robot
2. The user begins conversation with the robot
3. The input of the user is converted into text (STT) and passed to the dialogue system
4. The dialogue model generates a response given previous history and the persona sentences
5. Generated response is converted into speech (TTS) and the robot speaks the response
6. After the conversation, the robot provides grammar error feedback with the GEC system

#### • Model structures

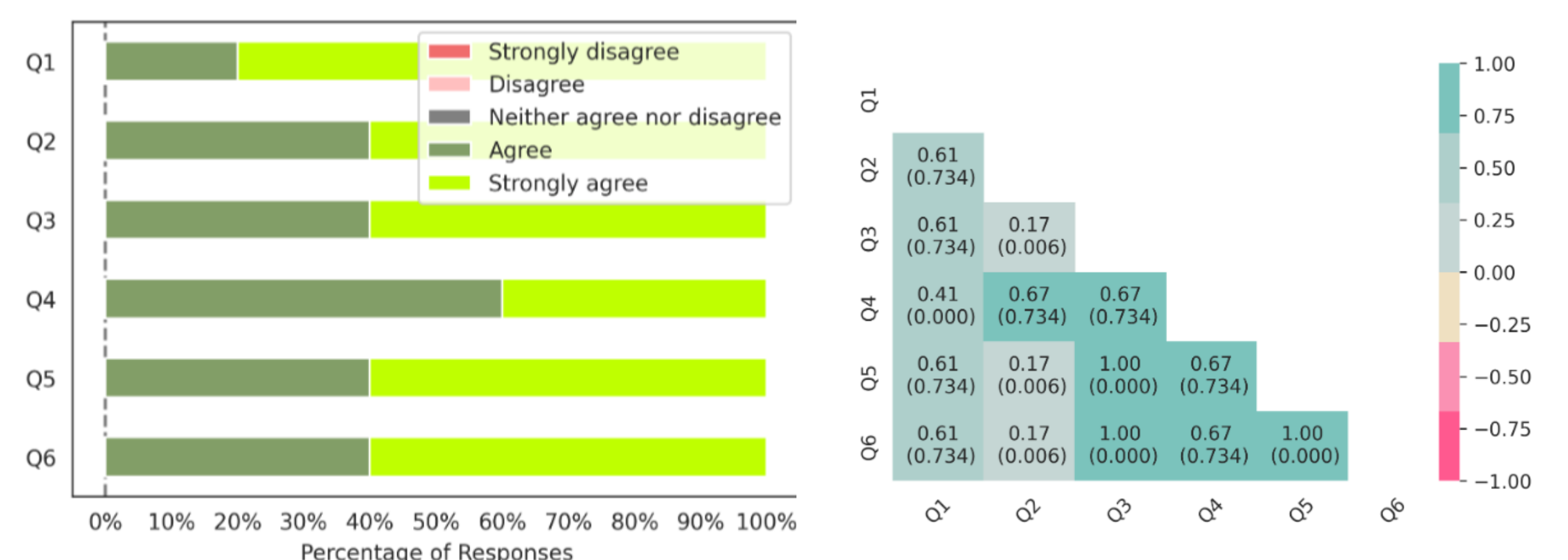


### Satisfaction Survey

#### • Questionnaire (middle school students)

Questionnaire	
Q1	I feel comfortable while interacting with a robot in a real human-like conversation.
Q2	I do not feel scared while talking to a robot.
Q3	Do you think FREETALKY will help alleviate your foreign language anxiety?
Q4	Are you satisfied with the performance of grammatical error feedback?
Q5	Do you think FREETALKY performs naturally in a multi-turn conversation?
Q6	Do you think persona is well applied in FREETALKY?

#### • Response to the survey



- Most questions about the system were scored as strongly agree or agree
- Implies that the proposed system is suitable for alleviating people's xenoglossophobia
- Shows a positive correlation in all question relationships