Interactive Comedy: Laugh as Next Intelligence

Naoko Tosa, Ryohei Nakatsu
Massachusetts Institute of Technology Center for Advanced Visual Studies
265 Massachusetts Avenue Cambridge, MA 02139 USA
naoko@mit.edu

Interaction & Intelligence project (JST) ATR HIS Labs
2-2-2 Seika-cho Soraku-gun Kyoto 619-0288 JAPAN

Abstract

Generally, technology looks at the external value of the object. At the very deep level, however, laugh is related to the touch of living and the internal value. It is very difficult to grasp this deep relationship.
Our personal feeling is the key to grasp this. This is not an issue of analysis or understanding, but an issue of the activities of our mind such as the jump of the idea and imagination. Laugh is an intelligence that emerges based on the sympathetic communications and, therefore, has a great power.
Recently, computer intelligence focuses too much on analysis and knowledge and because of this tendency, is likely to achieve only boring results. Real Intelligence is not boring. Therefore the intelligence we develop should not be boring. So, I realized comedy system by which human and computer interact and create laugh.

1   Introduction

Laugh is an essence of verbal conversation. We transmit information by verbal conversation. At the same time, verbal conversation transmits our emotions and our basic desires [1]. Therefore verbal conversation is a basis for maintaining human relations and social lives. In this type of conversation, such factors as the voice tone, timing, and speed play very important roles [2]. By controlling them, we enjoy conversations, keep human relations and maintain social lives [3].

2   MANZAI AS JAPANESE COMEDY

This aspect of communications strongly appeals to us. Therefore a well arranged conversations entertain us. There is an entertainment called comical dialogues in which conversation is sophisticated to a level of entertainment. In Japan we have our own form of comical dialogues called MANZAI. We enjoy Manzai by listening to the dialogue of two Manzai comedians. The two comedians play the role of "Boke" and "Tsukkomi." Boke plays a role of an ordinary person who expresses his/her everyday opinions. Sometimes these opinions are surface and boring and far from reality. Tsukkomi plays a role of a sensitive person who is keen to detect these opinions and becomes offensive to Boke. Boke shrinks from the opinions of Tsukkmi but sometimes becomes waked up to the reality. For the conversation between Boke and Tsukkomi, such factors as voice tone, timing, and speech are the keys as well as the conversation content. When these factors are well controlled, the audience is fascinated and involved into the conversation. They want to become Manzai comedians by themselves.

Figure 1. Interactive Comedy System

3   INTERACTIVE COMEDY SYSTEM

Interactive Comedy is the system that realizes such a dream. You play a role of difference and the computer plays the role of offence. Then they make a laugh. When you speak, the computer analyses the content, emotion, speed and timing of your utterance and utters back an appropriate Tsukkomi phrase. Then you speak back. By interacting with this system you will recognize

the joyfulness of conversation itself. Also at the same time, you will subconsciously learn the good way to control the timing, the utterance speed, and the emotion expression.

Example Interaction is follows.

People = (P) Computer = (C)

(P) Well, the nice weather is finally here.

(C) It's about time.

(P) I can't wait to get to the beach.

(C) Are you crazy, the water here is freezing.

(P) It's pretty amazing speaking with a"Manzai"Computer

(C) Stop sucking up!

(P) If that's the way you are going to be then maybe I should leave.

(C) Chill out

(P) I am glad that you found time to join us today despite your busy schedule.

(C) You make me feel so good.

(P) Maybe you are not that busy, seeing as you made it here today.

(C) What is that suppose to mean?

(P) Can you guess how many years we have been carrying out this research? 300years!

(C) You lie like a dog

Computer comedian recognizes 9 emotions.
Excited, Neutral, Anger, Disgust, Teasing, Sadness, Surprise, Greeting, Fear.
Emotion recognition is recognize human voice intonation by artificial neural network [4].
Example of comedy of emotion is follows.

<Excited>
Awesome!
Ooh, you're giving me goosebumps!
<Neutral>
Oh I'm sorry, were you talking to me?
Tell me more.
<Anger>
Keep your pants on.
Bite me.
<Disgust>
Take it easy, there, cowboy.
I know your lips are movin, but all I hear is blah blah, blah
<Teasing>
Talk to the hand.
Are you trying to seduce me?
<Sadness>
Don't make me cry
Maybe you 're right. Maybe I should just go.
<Surprise>
I think you're lying to me….
<Greeting>
What's shakin'?
<Fear>
You're scarin'me now
Don't go psycho on me.

4 THE TECHNOLOGY

The system consists of three parts. In the content analysis part, the meaning of the input speech is recognised using speech recognition technology. In the involvement analysis part, the tone of the input speech is analysed. Also the speed and the timing of input speech is analysed. By combing these two results, the level of the user involvement, in other words how deeply a user is involved into the conversation, is decided. In the character synthesis part, using the content analysis and the involvement analysis results, the speech output and the facial animation of the Manzai character is generated. Thus a user enjoy a laugh conversation with the system.[5]
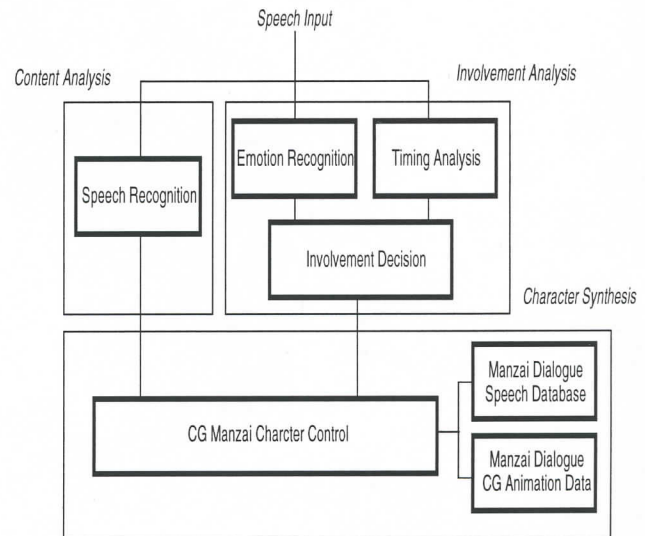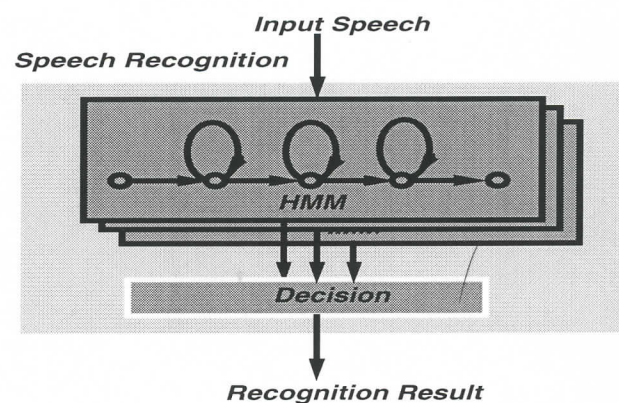

Figure 2. System Configuration

Content Analysis Part
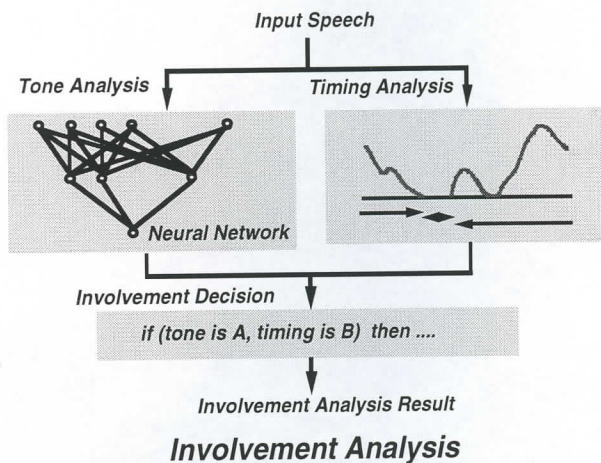
Figure 3. Speech analysis diagram

Figure 4. The involvement analysis diagram
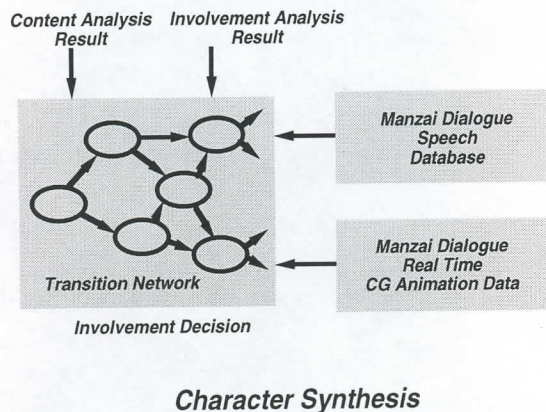

Figure 3. Real-time based Computer Graphics Character Synthesis

CONCLUSION

This system showed on Japanese TV Asahi broadcasting "Most Interesting News Digest in 2001" in New Year's Eve. We received grand prize of future robot category. This system is simple, but laugh technology has strong sympathy power for public society in the worldwide. Laugh means open mind and real communicate each other. Computer can be make laugh. It is very intelligence interaction. Because, even people communication sometime difficult for make laugh by consciousness.

Laugh have kind of nonverbal and subconscious our intelligence. In the future this kind of technology include computer operation system or robot, our society can be make intelligent feeling of hospitality and care of people.

Also, Comedy script is very important issue for make laugh. Because of laugh is very strong domestic culture. Depend on the country meaning of laugh is very different.

Interactive Manzai for Japanese version script made by Yoshimoto Japanese Entertainment company . Then when I showed Interactive Comedy in Boston, Improve Asylum who best comedy group in Boston translates for an American laugh. In this Spring, We showed Interactive Comedy for English version in Japan Pop Culture Festival (It is one of event of Haru Fest in Boston) at MIT media labs bartos theater organised by Consulate general of Japan in Boston.

ACKNOWLEDGMENT

References

[l] Pinhanez, Claudio, and Bobick, Aaron. "Using Computer Vision to Control a Reactive Computer Graphics Character in a Theater Play." Proceedings of ICVS'99, Las Canarias, Spain, January 1999.

[2] Picard, R. W. and Healey, J. "Affective Wearables" Personal Technologies, Vol. 1, No. 4, pp. 231-240, December 1997.

[3] Blumberg, Bruce, and Galyean, T. "Multi-Level Direction of Autonomous Creatures for Real-Time Virtual Environments." Computer Graphics, SIGGRAPH '95 Proceedings, Los Angeles, California, pp. 47-54. August 1995

[4] Tosa Naoko and Nakatsu Ryohei, "Life-Like Communication Agent –Emotion Sensing Character "MIC & Feeling Session Character "Muse," Proceedings of the third IEEE ICMCS, pp.12-19 (1996)

[5] Nakatsu Ryohei, Tosa Naoko, Ochi Takeshi, Suzuki Hideaki, "Concept of Interactive Movie Systems and Construction Example, "Electronic Information Communications Society Papers, DII, Vol.J81-D-II, No.5,pp.944-953(1998).