Traveller – Interacting with Agents to Deal with Misunderstandings Due to Culture

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ABSTRACT
In this paper we describe a demonstration of Traveller, an intercultural training tool for young adults between 18 and 25 years old. In Traveller, users travel to different countries and encounter 'strange' characters that show different behaviours depending on their synthetic culture. By interacting with these characters, users learn to deal with misunderstandings due to differences in conflicts.

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Intercultural Training, Virtual Environment, Intelligent Agents.

1. INTRODUCTION
Being able to deal with misunderstandings due to differences in culture is an important skill for young adults, as working with people from culturally diverse backgrounds is becoming commonplace in today's society. By making the learners aware that other people might have different rules of interpretation, intercultural training can be a valuable tool for helping people to deal with such misunderstandings.

Intercultural training is usually quite expensive and difficult to organise due to the amount of people and work involved. This is why researchers have created stand-alone intercultural training tools (for an overview, see [1]). Usually, these tools use intelligent agents to replace real world participants and actors, so learners can use these tools whenever and wherever. There are few digital tools that focus on skills that apply to interactions with people from a broad range of cultures. This is why we have developed Traveller.

In this paper we describe a demonstration[1] of Traveller. Traveller uses a story-based approach to increase the capability of learners to deal with misunderstandings due to culture. They interact with virtual intelligent characters that have different behaviours depending on their synthetic cultures (synthetic cultures are described in [2]). Their success or failure in interaction is determined by the actions that they choose.

2. TRAVELLER
In Traveller, the user plays the role of a young adult who has never been abroad. He will follow in the footsteps of his deceased grandfather, who travelled around the world when he was young.

At the beginning of the game, the user is presented with a letter from his grandfather. In this letter, which was written before he passed away, the user discovers the reason for his grandfather's travels: a long-lost treasure. Unfortunately, his grandfather was never able to find the treasure, so he encourages his grandchild to finish what he started. To do so, the user must find the pages of his grandfather's journal, which have been scattered all over the world. At the end of his journey the user discovers that there was no treasure; his grandfather had many great experiences during his travels, and he wanted to pass those experiences on to his grandchild.

Throughout Traveller, the user will have to travel to three different countries, and interact with the characters from that country within critical incidents (see Figure 1 for a visual representation). Because the characters from each country have different rules for appropriate behaviour, users will get into misunderstandings and sometimes even conflicts. For example, a user from an egalitarian culture might think it's appropriate to ask a favour of somebody with a higher status. However, in a more hierarchical culture, this might not be considered appropriate.

These misunderstandings help the user to progress in three different areas: cognition, behaviour, and affect. First, they become aware of the practices and values that are considered appropriate. Second, they should practice and experiment with

[1] Video at: http://ecute.eu/traveller/

appropriate behaviours. Third, they should be sensitive to changes in their emotional state after interactions, and not let negative emotions lead to prejudice.

Figure 1: Representation of an Interaction using the Kinect

3. TECHNOLOGY

Traveller is implemented in Unity 3D[2], a cross-platform game engine. We used the ION [3] framework to connect FAtiMA, the agent architecture, to Unity 3D. Users interact with the system through the Microsoft Kinect for Windows. We use CereProc3[3] and the Microsoft Speech API to translate text to speech, to give voice to the characters.

3.1 Interaction

We decided to use full body gestural interactions as they offer an intuitive way to implement non-verbal differences in gestures. We used the 'Full Body Interaction Framework' (FUBI), described in [4], that we use in combination with the Microsoft Kinect for Windows low-cost depth sensor[4], and the Kinect for Windows SDK[5] for user tracking. Within Traveller, we use two types of full body interaction: general gesture recognition (see Figure 1), and graphical user interface interaction (see Figure 2).

Figure 2: Getting directions in a bar

We use general gestures to show differences in cultures between the characters. Users can select different gestures to interact with the characters, but certain gestures are more appropriate in certain cultures. For example, we use two types of greetings: low bows for more hierarchical cultures, and head nods for more egalitarian cultures. Actions are represented on the screen as animations to help the user act out the gesture (see Figure 2). The gestures themselves are defined in an XML, and the FUBI framework automatically checks whether there is a match.

3.2 Agent Architecture

It is important that users are able to see how similar situations play out in different cultures. This leads to two requirements: Agents should show believable social behaviour, and that behaviour should vary based on the agents' synthetic culture.

The architecture that we have used in Traveller was built on top of FAtiMA [5]. This architecture is already quite capable in endowing agents with the capacity for emotions and deliberation. Cultural differences in the characters can be used through the use of a 'Symbol Translator'. This component translates the meaning of the event according to the culture's predefined symbols (using a simple association mechanism).

Furthermore, we use elements of Kemper's status-power theory[6]. By using his concept of 'social importance', we are able to generalise social factors of human motivation, as well as ascribe different cultural significances to these factors.

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