**Kaktus: A Socio-Emotionally Rich Interactive Narrative**

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**ABSTRACT**
The *Kaktus* computer game asks users to step into a narrative with interactive objects and characters. Actions taken will have social and emotional consequences for the other characters in the game. In order to achieve the goals of the plot, the player must demonstrate social and emotional competence. This paper describes game play and structure of *Kaktus*.

**Keywords**
Socially intelligent characters, anthropomorphism, computer games, interactive narrative

**INTRODUCTION**
Systems containing emotionally intelligent (semi)interactive characters have been deployed in a number of domains such as commerce (*Extempo.com*), play [1] and therapy [2]. The common ambition of these systems is to allow models of emotional appraisal and personality traits to steer the behavior of synthetic characters in a constrained situation. Emotionally intelligent reactions on user input are claimed to increase believability of the characters.

The system presented in this paper works along similar principles of semi-autonomous, emotionally intelligent characters. In addition to this, however, it places the emotionally intelligent characters into a plot structure and asks the user to identify with and play one of the characters [cf. 3]. By pushing the character-player dyad into situations in which they could act and react, *Kaktus* hopes to engage the user in the same way as a story does, and yet remain a truly interactive experience. In this way, *Kaktus* equips the poorly psychologized characters of today’s role-playing games (e.g., *the Sims*; Rockett’s *Adventure Maker* (Purple Moon) with mind and emotions and puts players and characters in socio-emotionally challenging situations.

**GAME DESCRIPTION**
The game scenario centers around three teen-age girls who are organizing a party for their high-school friends. The plot develops over the week before the party. The player acts as one of the characters while the system controls the others. In order to arrange a successful party, the player must make socially complex decisions, e.g., inviting the ‘right’ people, getting rid of parents, encouraging or discouraging alcohol consumption. Such tasks are accomplished through talking to characters or using objects available in the game (such as keys, diaries, candy, mobile phones, and buddy lists in those mobile phones). Apart from organizing the party, the goal of the game is to establish and maintain social relationships with other characters (e.g., friendship, love). In order to be successful, the player must adopt the role of a teenage girl, be sensitive to the social and emotional cues in the environment, and act on the basis of those.

The game is organized as a set of scenes or situations in a hyper-linked structure. These links, however, are not static, but depend on the emotional state of the player’s co-characters. For instance, if your friend Lovisa is angry with you, she may refuse to grant you to use her parents’ big villa for the party. In order to make progress, the player will have to find ways to get Lovisa into the right state of mind. Getting characters into the ‘right mood’ is a central aspect of the game.

**Game play and system structure**
In each situation, the player talks to the other characters through choosing from a set of statements displayed in the dialogue window (Fig. 1). Each statement has a predefined semantic representation stating its meaning with regard to characters, actions, objects and relationships in the game, e.g., kiss(Niklas, Lovisa).

When a statement is selected the semantic representation, which is only used internally in the system, is sent to and evaluated by the emotional reasoner. This part of the system is based on Roseman’s et al. [4] theory of how emotions are attributed to oneself and other people. According to this theory, emotions are appraised according to a set of parameters. For instance, is the event that caused the emotion motive consistent or motive inconsistent? Is the event that caused the emotion self-caused, other-caused or circumstance caused? Is the event that caused the emotion certain or uncertain to the person? Is the person in high or low control of the situation? (Could she have done something to prevent the event to happen?)

For instance, if the event is caused by someone else and has consequences that are oppositional to the person’s
goals/motives, then anger prototypically would arise. Roseman’s theory proposes five parameters resulting in a total of 15 emotions. For Kaktus, we only use two parameters (motive consistency / motive inconsistency and self-caused / other-caused / circumstance-caused). Thus, our characters are equipped with in total six emotions (joy, liking, pride, anger, sadness, regret).

When assessing the emotional consequences of a given situation, the reasoner also takes into consideration the characters goals and personality type. Goals are of two types. General goals are shared by all characters, e.g., be_popular(lovisa), but are weighted differently depending on the personality of the specific character. Each character is also equipped with a set of personal goals harmonizing with their intended personality, e.g., go_steady_with(lovisa, niklas). The personalities of the characters were determined beforehand with careful respect to the plot of the game. This process is not unlike a director’s analysis of personality of the characters, before shooting a film.

After each action of the player, the emotional reasoner updates the co-characters’ emotional state. Co-characters’ emotions are visualized in the emotion display (Fig. 1), showing the type of and intensity of the emotion. In order to prevent excessively violent flips between strongly positive and strongly negative emotions, the updating mechanism also takes into consideration the present emotional state of the character. For example, if a character has the emotional state joy(9) and experiences something that would result in the emotional state dislike(8), the final state will be set to joy(3).

**Generating behavior**

In addition to the emotion display, the game engine also generates a behavior or an expression for each character based on its current state. Each emotion is connected to a small collection of expressions (e.g., “X frowns” or “Y smiles”) for three different levels of emotional intensity (weak, medium and strong). When the emotional state of co-characters is set by the system, an expression is randomly selected and displayed (as text) to the player in the story display (Fig. 1). The expressions were created to be rather emotionally neutral – albeit still congruent with the emotion – so that users actively would attribute emotions to the characters on the basis of the situation rather than the expression.

**Objects**

The player is not restricted to the verbal actions in the dialogue window. The game also hosts a number of objects (a mobile phone, a diary, a magazine, a phonebook, a bowl of candy). In some situations, interaction with the objects is even necessary to move the plot along e.g., when inviting someone to the party via mobile phone.

**Saving and printing game sessions**

The story display holds an account of everything that has occurred in the game. This includes all of the user’s actions, the co-characters’ reactions, expressions and behaviors, as well as prologues and epilogues. The story can be saved to file or printed out if the player wishes to save a particularly successful (or unsuccessful) game session. Saved stories can be used for post mortem analysis of the session and thus be a helpful tool for players in honing their social skills for future game sessions.

**CONCLUSION**

Kaktus can be a compelling game for teenagers of different gender. Kaktus lets young players explore the weave of friendship, love and socio-emotional relations at a time in life when such issues are especially complex. In the future, we will expand the character gallery allowing players to take on male roles as well. Then Kaktus truly will allow teenagers to adopt and play with different identities.

**REFERENCES**


