An approach for dialogue generation for game characters

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ABSTRACT
This paper presents work in progress focused on the creation of dialogue characters for story-driven games that are based on the notion of an information-state to represent the dialogue state and game state. To explore this we are using a game loosely based on the classic movie Twelve Angry Men (Lumet 1957) where the task is to convince a jury to agree on a verdict through the use of dialogue. In relation to this, we explore the design of dialogue models based on the information-state approach.

KEYWORDS
Natural language dialogue, narrative, procedural content generation, authoring

INTRODUCTION
Many story-driven games use in-game dialogue and cut-scenes to convey their stories. The game characters provide the social backdrop that allows game players to engage into the story of the game. Some games, such as Mass Effect series (BioWare, 2007; 2010; 2012) and Witcher series (CD Projekt RED, 2007; 2011; 2015), use branching dialogue to enable players to influence the story of the game. The branching dialogue approach tends to generate repetition: the non-player characters (NPC) use exactly the same dialogue lines over and over again. Some games, such as Mass Effect 2 (BioWare, 2010) employ a limited dialogue memory for their NPCs that allow the player to influence the story of the game.

It is worth to note that some choices in Mass Effect 2 dialogue are reversible as those choices are tied to the main story and quest line. Mass Effect 3 (BioWare, 2012) and Fallout 4 (Bethesda Game Studios, 2015) aimed to solve this repetition problem by making many dialog snippets playable only once. The downside of this is that once dialogue snippets have been exhausted they cannot revisit this part of the story. Consequently, this approach leads to inconsistent NPC behaviours. In practice, this is not a big issue, because players have come to expect somewhat unbelievable characters; many NPCs are failing to exhibit believable behaviours (cf., Lankoski & Björk, 2007).

CREATING DIALOGUE FOR DEADLOCKED
The work we present in this paper addresses the challenge of using the information-state approach (Traum & Larsson 2003) for dialogue management for socially believable non-playable game characters (NPC). Dialogue generation can be seen a particular kind of procedural content generation that requires a principled approach. Designing branching dialogue while adhering to linguistic principles is a challenging matter (Ryan et al 2016)
when it comes to finding the appropriate level of representation. Approaches to handling this range from handcrafted rule-based systems that handle specific dialogue exchanges (Mateas & Stern, 2005) to machine learning techniques (e.g., Lee & Cho, 2012).

The case we have chosen to explore generation of game characters (and at a later stage authoring tools) is dialogue creation for a game called Deadlocked vaguely based on the plot of the movie Twelve Angry Men (Lumet 1957) in which one of the jurors (the player) is trying to convince the other jurors to arrive at a unanimous verdict. The basic means for the player is to engage in dialogue with the other jurors who are NPCs with a dialogue interface. The behaviour of the player affect his/her reputation, for example, being too pushy or using arguments that are malicious or may seem offensive (threats) will make the game harder although the overall objective may appear successful. The other jurors share information among each other and may shift in position (something which means that the player needs to make sure the stance of the other jurors).

In its simplest form the game can be seen as unlocking a set of challenges or flipping a set of switches (each juror) something which requires at least eleven completed dialogues. While the end goal of the game remains simple it allows a rich set of challenges for dialogue design such as argumentation, social behaviours such as flattering, lying, eavesdropping etc. As the jurors shift their opinions during gameplay, based on the player’s conversational behaviour with other jurors, the player needs to engage in several dialogues in order to assure that the deadlock is resolved.

To address the integration of principled information-state dialogue with the in-game characters, software components and dialogue act taxonomies for dialogue and behaviour generation will be designed and tested. Our outset is a linear version of the game were we see actions of the player as a tick in the system, although it is possible to imagine a version where parallel actions alter the game state (interaction in real time with other players or objects in the game).

BIBLIOGRAPHY