A Software Framework for Social Cue-based Interaction with a Virtual Recruiter

Personal manuscript. Final version can be found on link.springer.com

Ionut Damian¹, Tobias Baur¹, Patrick Gebhard², Kaška Porayska-Pomsta³, and Elisabeth André¹

¹ Human Centered Multimedia, Augsburg University
damian@hcm-lab.de, baur@hcm-lab.de, andre@hcm-lab.de
² DFKI GmbH, Saarbrücken, Germany, patrick.gebhard@dfki.de
³ London Knowledge Lab, Institute of Education, K.Porayska-Pomsta@ioe.ac.uk

1 Introduction and Motivation

In this paper we present a software framework which can be used to generate job interview simulations using a virtual recruiter and social cue-based interaction. We use the term social cues to describe conscious or unconscious behavioural patterns which have a specific meaning in a social context. The main goal of this endeavour is to help youngsters improve social skills pertinent to job interviews.

Fig. 1. General setup and main software modules of the system.

2 The System

We propose a job interview simulation environment featuring a social virtual character in the role of the recruiter and using signal processing techniques to generate seamless interaction between the user and the character. The system consists of three major modules: a behaviour manager, a social cue recognition module and a scenario manager (Fig. ??).

At the backbone of the system lies the EMBOTS behaviour manager [?]. It supports fine grained multimodal behaviour control for virtual characters and offers various functions which are needed in an interactive character system (e.g. TTS, Character Rendering, Emotion Simulation).
The social cue recognition module is based on the SSI framework\(^4\) \([?]\). The main strength of SSI lies in its ability to record and process human behaviour data and social signals in real time. In particular, SSI supports the parallel and synchronized processing of data from multiple sensor devices, such as web/dv cameras, multi-channel microphones and various physiological sensors. For our system, we rely on the Microsoft Kinect\(^5\) sensor. Its main advantages are its low cost, its robustness towards environmental noise, such as lighting and background, and the availability of various software toolkits which provide skeleton and face tracking. Using SSI and the Microsoft Kinect, we implemented several social cue recognizers which are able to automatically detect various behaviours, such as head gaze, postures, gestures and voice activity, in real time \([?]\). The data of each interaction is also recorded and can be used to debrief the user during a post-hoc analysis of the interview simulation using the NovA behaviour analysis tool\(^6\).

The third module we use in our system is the SceneMaker scenario manager \([?]\). It allows us to model and to execute behavioural aspects at different levels of abstraction. Using SceneMaker we modelled a prototypical job interview scenario consisting of various dialogue scenes as well as reactions to different behaviours recognized by the social cue recognizers.

\section{Conclusion}

We presented an approach to a job interview simulation environment featuring a virtual recruiter and social cue based interaction. The virtual character’s behaviour is controlled by the EMBOTS behaviour manager \([?]\) and the interaction is facilitated by several social cue recognizers using the SSI framework \([?]\) and a Microsoft Kinect. The recognizers are able to automatically analyse the behaviour of the user in real time. Preliminary tests suggest that the system generates credible job interview simulations giving users a realistic experience.

\textbf{Acknowledgement.} This work was partially funded by the European Commission within FP7-ICT-2011-7 (Project TARDIS, grant agreement no. 288578).

\footnotesize
\begin{itemize}
  \item \(^4\) http://openssi.net
  \item \(^5\) http://www.microsoft.com/en-us/kinectforwindows
  \item \(^6\) http://openssi.net/nova
\end{itemize}