

Let me Tell You about Your Personality![†]

Real-time Personality Prediction from Nonverbal Behavioural Cues

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Abstract—Although automatic personality analysis has been studied extensively in recent years, it has not yet been adopted for real time applications and real life practices. To the best of our knowledge, this demonstration is a first attempt at predicting the widely used Big Five personality dimensions and a number of social dimensions from nonverbal behavioural cues in real-time. The proposed system aims to analyse the nonverbal behaviour of the person that interacts with a small humanoid robot through a live streaming camera, and delivers the predicted personality and social dimensions on the fly.

I. INTRODUCTION

In recent years the interest in personality computing [1] has grown exponentially due its potential impact in a number of applications including novel interfaces for human-computer interaction. The personality computing community focuses almost exclusively on either automatic personality analysis or automatic personality synthesis. To enable a better user experience and engagement, the aim is developing natural, human-like systems that can do both - not only sense their users, but also adapt and respond to the users' profile (i.e., personality) in the course of the interaction.

The SEMAINE system [2] is a representative system that analyses the nonverbal behaviours and affective states of the users interacting with a virtual agent and allows the virtual agent to react accordingly for maintaining the flow of the conversation. However, only a few systems have considered the personality of the user during the interaction. This demonstration aims to present the MAPTRAITS system that performs automatic personality prediction in real-time, which can be potentially fed into the synthesis module for system adaptation. The MAPTRAITS system enables on-the-fly prediction of the widely used Big Five personality dimensions (i.e., agreeableness, openness, neuroticism, conscientiousness and extroversion) and a number of social dimensions (i.e., engagement, facial/vocal attractiveness and likability). We have tested the MAPTRAITS system in real-time with a user sitting in front of a computer screen and looking at a webcam. Our aim in this demonstration is to test it further by making use of a robotic platform.

II. THE SYSTEM

The MAPTRAITS system is based on the extension and real-time implementation of the continuous prediction of personality and social dimensions introduced in our previous works [3], [4]. The current system is trained using 30 audio-visual clips from the SEMAINE corpus [2]. For each clip, continuous (varying with time) labels were generated

[†]This research work is funded by the EPSRC under its IDEAS Factory Sandpits call on Digital Personhood (grant ref: EP/L00416X/1).

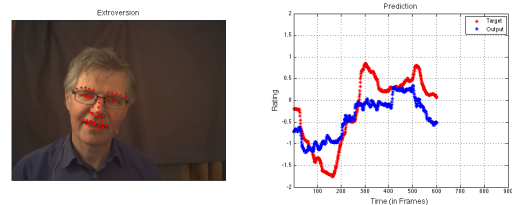


Fig. 1. Real-time prediction along the extroversion dimension. The blue line is the prediction output and the red line is the target (ground-truth).

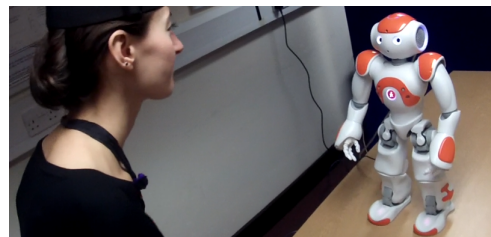


Fig. 2. The envisioned demonstration setup.

by external observers along the Big Five personality dimensions and social dimensions. For automatic prediction, we extracted a set of multimodal features to capture the nonverbal behavioural patterns from visual and vocal cues, and used a sequence regression method for modelling the relationships between the features and the labels. Fig. 1 shows a frame from the video illustrating the continuous personality prediction for the extroversion dimension.

III. THE DEMONSTRATION

Our goal in this demonstration is to present the utility of the MAPTRAITS system using a small humanoid robot, i.e. Nao [5]. The envisioned demonstration setup is provided in Fig. 2. Using a Wizard-of-Oz setup, Nao will ask the participant a predefined set of questions about their jobs, hobbies and memories while the MAPTRAITS system (running on a PC) will analyse the participant's personality in real-time using a camera placed on a tripod. The predicted personality scores will be displayed to the participant instantaneously on a screen. At the end of the interaction the participant will be asked to provide feedback and comments about their experience.

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