Presentation Trainer: Polishing your communication skills

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Abstract. The paper presents the evolution of Presentation Trainer, a prototypical sensor-based toolkit that works as a public speaking instructor. It tracks the learner's body posture, movements and voice in order to provide instructional feedback on nonverbal communication skills. Based on our design-based research the current version of the Presentation Trainer is able to provide the learner with the type of feedback that it considers to be appropriate according to the learner's performance; it includes haptic feedback helping to reduce the learner's cognitive load.

Keywords: Sensor-based Learning, Immediate Feedback, Demonstration

1   Introduction

"There is no such thing as failure, only feedback." Is a common motivational phrase, whose truth appears to be undisputed. However, knowing how to correctly interpret this feedback is not always a straightforward task. This is the case of public speaking, where the feedback provided by a tutor has proven to have a big influence in the development of the learners' public speaking skills [1]. The timing, in which this feedback is given, delayed or immediate [2], has also shown to be an important factor regarding the learning outcomes. Revealing that immediate feedback is far more efficient for aspects that can be corrected immediately, such as the nonverbal communication of the speaker [3]. The implementation of immediate feedback in general, not only for public speaking, is still a challenge. Hence, it requires personal tutors to be constantly evaluating the learner. Sensor technologies seem to be suitable solution for this challenge, since they have the innate capability to continuously track the learner. Furthermore they have already shown to support learning by providing learners with feedback in a vast number of learning applications [4]. To study how sensors can be used to provide learners with immediate feedback for public speaking we conducted a design-based research approach [5] on the *Presentation Trainer*, a tool designed to support learners on the development of their public speaking skills. In this paper we describe the evolution of the *Presentation Trainer* up to its current 3rd version.

2 Presentation Trainer Iterations

The *Presentation Trainer* is a sensor-based system that works as a public speaker instructor for nonverbal communication. For its development we followed a design-based research methodology, creating a different version of the tool on each iteration of our research. This section describes the main characteristics of the different versions of the *Presentation Trainer.*

2.1 First Version

The first version of the *Presentation Trainer* was developed in Processing 2.1[1]. It uses the Microsoft Kinect Sensor V1[2] to track the body language of the learner and the computer's integrated microphone to track the learner's voice.
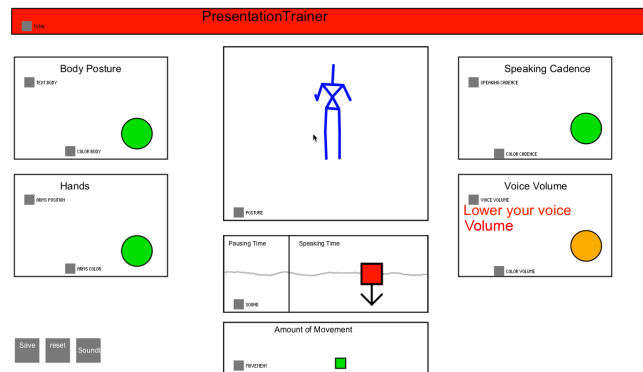

Fig. 1. Presentation Trainer V1.

This version of the trainer provides feedback through a computer monitor using a dashboard interface (Fig. 1). This interface contains eight feedback modules including: A skeleton representation that highlights the limbs of the learner placed in a wrong position, a volume graph mirroring the learner's usage of her voice, an amount of movement indicator, four modules that get highlighted giving feedback about specific mistakes, and a general feedback module that gets highlighted when a mistake is tracked.

2.2 Second Version

The second version of the Presentation Trainer was also developed in Processing 2.1 and it also uses the first version of the Microsoft Kinect and the computer's integrated microphone to track the users body language and use of voice.

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[1] Processing: http://processing.org [Accessed 13 March 2015]
[2] http://www.xbox.com/en-US/kinect [Accessed 13 March 2015]

It contains two different modes: the freestyle, and the Exercise mode. The freestyle mode (Fig. 2) allows learner's to practice for their presentations while receiving feedback from a clear dashboard interface. This interface contains an enhanced mirror that highlights important aspects of the learner's body language, a voice histogram and four modules represented by icons, that when highlighted shortly instruct the learner how to correct her performance.

The exercise mode contains six different exercises, each one of them designed to train a specific skill such as: standing in a proper posture, using different volume ranges, proper use of hand gestures, proper use of pauses, leaning in and speaking soft, and keeping composure while answering questions.
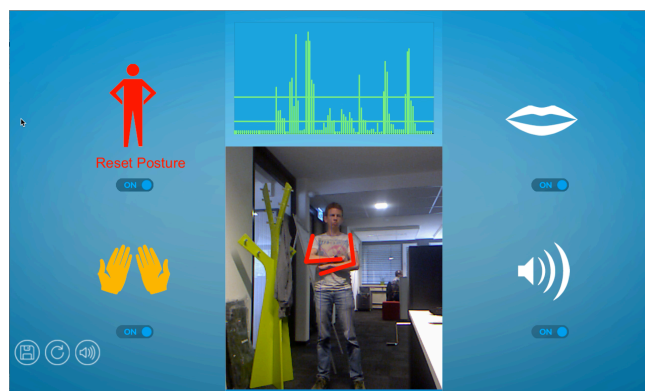

Fig. 2. Freestyle Mode Interface

2.3 Third Version

This third version of the Presentation Trainer was developed using the .Net Framework[3] and the Microsoft Kinect for Windows V2[4] to track the learner's body language and voice.

It contains an immersive interface that continuously shows a mirrored image of the learner and showing at maximum feedback about one specific aspect at the time (Fig. 3). It uses an intelligent algorithm that decides the appropriate time and type of feedback to be provided to the learner. The type of feedback can be continuous without interrupting the learner's flow, or interruptive when the tool infers that the learner needs to stop and reflect about her performance. According to the learner's performance it suggests the learner to focus on working on a specific communication aspect at the time, and guides her through it. To ensure that the learner receives the right feedback at the right time while training, this version the *Presentation Trainer* also provides feedback to the learner through the haptic channel.

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[3] http://www.microsoft.com/net [Accessed 13 March 2015]
[4] http://www.microsoft.com/en-us/kinectforwindows/ [Accessed 13 March 2015]
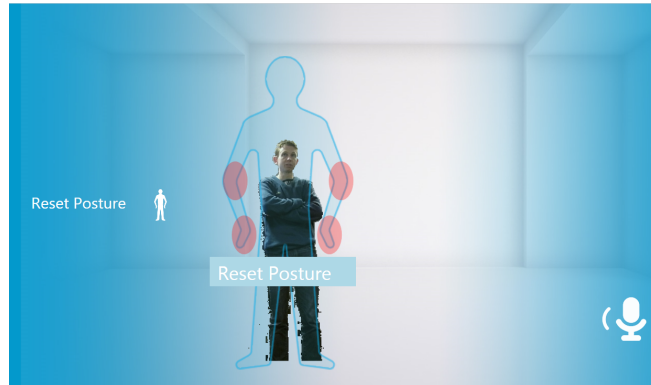
Fig. 3. Presentation Trainer V3

3   Conclusions and Future Work

The Presentation Trainer is a sensor-based tool that works as public speaker instructor. It has been evolving to its third version so far based on observations coming from user tests. The general findings of the tests have shown that providing the learners with the type of immediate feedback that can be easily assimilated and therefore help them to develop their skills, is a quite challenging task that requires a meticulous design.

For future work we will continue our design-research approach, to improve the feedback of the Presentation Trainer, exploring how to personalized it.

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