A demonstration of multi-party dialogue using virtual coaches: the first Council of Coaches demonstrator

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Abstract. We demonstrate here the first Technical Demonstrator for *Council of Coaches* a project that is aiming to deploy a platform for virtual health coaching, and will incorporate computational models of argument and dialogue.

Keywords. Medical argumentation, dialogue, mixed-initiative dialogue, coaching

1. Introduction

Council of Coaches[2] is a project funded under the European Union's Horizon-2020 Framework[3]. The project aims to deliver a platform for health coaching, where a user has their own council of virtual coaches who advise them on various aspects of managing their day-to-day health [1]. We present here an early technical demonstrator from the project, providing an insight into the envisaged final system. While several different software libraries and frameworks are used in the demonstrator, we focus here on the dialogue and argumentation framework that provides structured communication between the patient and the coaches, as well as between the coaches themselves.

2. Dialogue and argumentation framework

Computational models of argument and dialogue will play a key role in the final Council of Coaches system. The execution of dialogue game specifications, expressed in the

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Dialogue Game Description Language (DGDL) [2], will allow structured interaction between a patient and their coaches, and between the coaches themselves. Argumentation will be used to resolve conflicts that may arise throughout the system. Such conflicts may occur in the knowledge base (e.g. conflicting medical knowledge), or during a dialogue (e.g. two coaches wishing to give conflicting advice).

In the current version of the demonstrator, presented here, focus has been placed on providing structured dialogue, using the Dialogue Game Execution Platform (DGEP) [2] and relevant DGDL specifications of protocols. Currently, two protocols are used. The first allows the user to have an introductory chat with the individual coaches, with coach saying who they are and explaining their area of expertise. The second is derived from goal-setting theory, where the patient and coaches collectively determine a health-related goal for the patient to aspire to (e.g. increasing their exercise, reducing their fat intake, etc.) [3,4]. The coaches use a shared knowledge base containing general information about the patient, and their own individual knowledge bases containing specific medical knowledge to select both the type and content of their interactions.

3. Conclusions and future work

We have demonstrated an early technical prototype from *Council of Coaches*, which incorporates a dialogue and argumentation framework for structured, mixed-initiative interaction between a real human user (a patient) and multiple virtual coaches (agents). As the project progresses, the prototype will be revised, refined and updated towards the final *Council of Coaches* system. This will include the development of additional dialogue protocols that model possible interactions a patient might have with health coaches, and further development of the argumentation component for resolving conflict, both before and during a coaching dialogue.

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