HIMAS 2020
International Workshop on Healthcare Intelligent Multi-Agent Systems

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Premise

Due to the ongoing global COVID-19 situation, **the workshop is asynchronous**, which means that each person interprets the schedule in their own time zone.
The aim of the schedule is:

- to get a commitment to spend time watching talks and engaging with comments
- to create synchronisation within each timezone, allowing for some discussion and social interaction

Organisation

As such, there is no static program of the workshop according to whatever time zone, as we are too dispersed to guarantee a nice experience to every attendee. Nevertheless:

- all the interested people, authors of the workshop or not, may exploit this shared document to **query presenters about their presentation**, either by using the "comment" functionality or by directly writing text in the appropriate section below each presentation. In any case, *please "sign" your comment* either with your name or with your contact information, so that the presenter or author can respond fruitfully
- all the interested people may ask to organisers (please, *include all organisers in Cc*) to arrange **live Q&A sessions** with the authors of the workshop papers, that organisers will then attend as moderators. The schedule of this live Q&A sessions will be agreed upon case by case amongst the paper authors and the interested people

Presenters (and other co-authors in general) MUST COMMIT to **regularly monitor this shared document** and reply to comments as appropriate, as a form of social engagement.

Presentations

Session 1

The effect of multimodal emotional expression on responses to a digital human during a self-disclosure conversation: a computational analysis of user language.

Kate Loveys, Mark Sagar and Elizabeth Broadbent.

Presentation video: https://screencast-o-matic.com/watch/cYfZnYAUuI
Comments section:

1. *[Stefano Mariani]* Dear Kate, thanks for your nice and interesting presentation. I was wondering: how much "autonomy" of the digital agent is needed actually? I mean: I imagine there are boundaries within which the digital agent conversation should stay, for instance to not touch delicate topics. Then: is it the digital agent really quite free to choose the course of the dialogue, not only about topics but also about which emotion to disclose, or is it a strictly-scripted behaviour, with little autonomy? Is some unsupervised AI involved in the digital human? Is it a rule engine behind the scenes? Many thanks.
    a. [Kate] Thank you for your question, Stefano. In this study, we deliberately kept the conversation quite scripted to ensure participants had as close to the same conversation as possible across experimental conditions. We thought this was necessary for experimental control. We also preprogrammed the digital human's emotional responses to be triggered by certain words the digital human said for experimental control. We needed to ensure that participants in the "emotional face" or "emotional voice" conditions all received the same amount of emotion from the digital human. While we tightly controlled the digital human for this study, the digital humans we worked with are actually capable of more than this. For example, they are able to classify the emotions they see in users facial expressions and respond differently based on what is detected. One response they can do is to mirror the emotion they detect so they can, for example, return a smile. It would be interesting to run a study where they have some more autonomy.
2. [*Mohamed.T.Bennai*] Dear Kate, thank you for your presentation. The topic is exciting, and it may be a first step for the elaboration of digital companions, like the ones described in sci-fi books. Therefore, my question is somehow related to the previous one posted by *Stefano about* the conversation task. Does the digital human have any adaptability in choosing the question sequence or the emotions to express, according to human responses, for example? Thanks again.
    a. [Kate] Thank you for your question, Mohamed. In this study we tightly controlled the digital human's language content and emotional expressions to ensure that participants across conditions received a similar conversation, and that participants in the "emotional face" or "emotional voice" conditions

received the same amount of emotion. The question sequence was predetermined and the emotions were triggered based off particular words or phrases the digital human said. We made these decisions aiming for experimental control, however it would definitely be very interesting to increase how personalized the digital human's conversation and/or emotional responses are to the user in future studies. I think this would probably improve peoples sense of rapport with the digital human, to ultimately make it a better digital companion.

b. [Mohamed.T.Bennai] Many thanks Kate. Yes, I think it would be very interesting to see the effects of personalization on the results. Good continuation and I hope to read about your future studies.

Circadian Rhythm and Pain: Mathematical Model based on Multiagent Simulation.

Angélica Theis Dos Santos, Catia Maria Dos Santos Machado and Diana Francisca Adamatti.

Presentation video: https://screencast-o-matic.com/watch/cYf3cBAjwp
Comments section:

3.

Agent-based modelling for Ontology-driven analysis of patient trajectories.

Davide Calvaresi, Michael Schumacher and Jean-Paul Calbimonte.

Presentation video: https://screencast-o-matic.com/watch/cYf3DYA2jo
Comments section:

4. *[Stefano Mariani]* Dear Jean-Paul, thanks for your insightful presentation. I found particularly interesting the concept of "trajectory" applied to patient lifetime, but I expected it to be more concerned with modeling the dynamics of patient treatment, whereas in your presentation and paper it seems to deal mostly with data specification and analysis of static aspects (such as recommendations based on current condition)...could you clarify? As an example, I would expect patient trajectories to enable doing predictions of future events, such as outcomes of treatments, or time expected to reach certain stages of the disease...Many thanks.

On the Integration of Agents and Digital Twins in Healthcare.

Angelo Croatti, Matteo Gabellini, Sara Montagna and Alessandro Ricci.

Presentation video:
https://underline.io/lecture/98-on-the-integration-of-agents-and-digital-twins-in-healthcare
Comments section:

5.

Session 2

Complementing agents with cognitive services: a case study in healthcare.

Sara Montagna, Stefano Mariani, Emiliano Gamberini, Alessandro Ricci and Franco Zambonelli.

Presentation video: https://screencast-o-matic.com/watch/cYhnIqBzhK
Comments section:

a. [*Mohamed.T.Bennai*] Dear Sara, thank you for your interesting presentation. So, my question concerns the flexibility of the PMDA. Does it come from the interactions of the latter with the cognitive service, or is it the cognitive service that adapts its response to the different parameters (patient's state, patient's history ...). Many thanks again.…
b. [*Mohamed.T.Bennai*] Thank you Sara, It's clearer now. The use of interaction between the agent and the cognitive service is very interesting. I look forward reading your paper soon.

A Cooperative Approach Based on Local Similarities and Discontinuities Detection for Brain MR Images Segmentation.

Mohamed Tahar Bennai, Smaine Mazouzi, Zahia Guessoum, Mohamed Mezghiche and Stéphane Cormier.

Presentation video:
https://underline.io/lecture/89-a-cooperative-approach-based-on-local-detection-of-similarities-and-discontinuities-for-brain-mr-images-segmentation

Comments section:

6.

Agent-oriented decision support system for business processes management with genetic algorithm optimization: an application in healthcare.

Emilio Sulis, Pietro Terna, Antonio Di Leva, Guido Boella and Adriana Boccuzzi

Presentation video: https://screencast-o-matic.com/watch/cYfZF0AafV
Comments section:

7.