UNIVERSITÄT BIELEFELD
Medizinische Fakultät OWL

Medical Assistance Systems AG 2

Interactive Robotics in Medicine and Care AG 16

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Bachelor Thesis

NEEM Evaluation

NEEMs (Narrative Enabled Episodic Memories) plays a central role in the representation of experiences in a growing number of research projects. They represent recordings of the movements and actions of a person or even a robot itself. The aim is to enable robots to learn movements and actions based on these recordings. The format itself consists of three components (background, narrative, experience), which contain different information about the memory. In order for the robot to learn from these memories, it needs a large amount of NEEMs, which must be stored in a database. The need to process these large amounts of data raises the question of the efficiency of the format and the performance of its processing. This bachelor's thesis aims to analyse and evaluate the NEEM format:

- Advantages and disadvantages of the NEEM format (Narrative Enabled Episodic Memories) in comparison to other forms of knowledge representation.

- Performance evaluation of the further processing of NEEMs

- Analysing the optimality and user-friendliness of the NEEM format

Related literature

M. Beetz, D. Beßler, A. Haidu, M. Pomarlan, A. K. Bozcuoğlu and G. Bartels, "Know Rob 2.0 — A 2nd Generation Knowledge Processing Framework for Cognition-Enabled Robotic Agents," 2018 IEEE International Conference on Robotics and Automation (ICRA), Brisbane, QLD, Australia, 2018, pp. 512-519, doi: 10.1109/ICRA.2018.8460964.

https://ease-crc.github.io/soma/owl/1.1.0/NEEM-Handbook.pdf

Medical assistance systems ranging from robots to smart home devices and apps provide support for people in physical and cognitive tasks. Based on a deep understanding of social interaction and human cognition, we develop effective intelligent assistance systems with the flexibility to co-construct interaction with different user groups (patients, relatives, doctors, nurses, etc.). This is achieved through a consistent *user-centered co-design*. Our goal is to support people in their well-being and participation through *studies and technology development* so that they can live autonomously and healthily.

More information is available at: `https://www.uni-bielefeld.de/fakultaeten/medizin/fakultaet/arbeitsgruppen/assistenzsysteme/`

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