Gathering egocentric video and other sensor data with AAC users to inform narrative prediction

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Personal narrative has long been accepted as a key part of our daily communication. Sharing our experiences with friends, family and others makes up a large proportion of our conversation [1]. Many of these narratives are told more than once: sharing the good news of a new job, the stressful story of the flat tire in the highlands or all the things we experienced during our holidays.

During a conversation, partners base their contributions amongst other factors on the context of the conversation, for example, who the conversation partner is or where and when a conversation takes place. Some AAC systems provide the user with phrases and whole narratives rather than simple word prediction. In a study by Todman et al. [2] handcrafted contextual conversational items were provided to AAC users on their device, communication rates of up to 64 wpm were demonstrated. However, using such a system requires hand scripted paragraphs and training users to remember the existence and location of these.
Automatic data-to-text sentence generators have been trialed in narrative based systems. In [3], a narrative ontology was populated with conversational topics linked to people and places.

There are some attempts to use automatically gathered context information to improve prediction. Examples include providing vocabulary for ordering when located in a café or restaurant or presenting tagged pre-stored phrases depending on who the conversation partner is. Research by [4] has added topic identification to inform context aware SGDs but the implementation of a real-time system has yet to be achieved.

Aim

In this presentation, we will discuss the findings of a study we conducted with AAC users with the aim to gather context information. The context data collected includes egocentric video, location and time of a conversation as well as the AAC user's speech output.

We will describe the larger project and will present the results of data collection and the potential use of the data to inform prediction.

The presentation will highlight challenges encountered and solutions adopted when collecting video data in public spaces, particularly when video data is combined with personal information such as identifying individuals and linking the data to time and location.

Method

Before commencing the study, ethical approval of the University's ethics committee was obtained. Additionally, the data protection office of the university was consulted to ensure that no data protection regulations were breeched.

Two AAC users with complex physical disabilities carried a video camera, which recorded the field of view of the participant during several hours of the day. They also carried a mobile phone, which

collected additional data such as GPS information about the location of the participant and accelerometer data for movement information.

Results

Initial expectations were that the data gathering with egocentric video cameras would raise a lot of concern in bystanders and lead to a challenging situation for the data collection did not materialise.

Data gathering was conducted during work situations, e.g. during group meetings, at home, e.g. when meeting friends and out and about in town, e.g. visiting a café.

Challenges however included the mounting of the video cameras to allow a steady image capturing the field of vision of the participant. Static mounting on the participant's shoulder (for the ambulant participant) or on the second participant's wheelchair did not allow capturing the participants' view when they turned their head.

Currently the gathered video data is getting analysed for computer vision analysis to extract useful data to inform the prediction module of the AAC system.

Conclusion

During the data gathering with two AAC users with complex physical disabilities, a number of hours of egocentric video data and location and movement censor data was collected. Data collection was conducted according to data protection regulations and ethical considerations.

The data will now be analysed for further use in our prediction system.

Future data gathering might incorporate the use of glasses with built-in cameras to accommodate for head movement and so allowing to always capture the field of view of the participant.

References

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