Augmento – Reinforcing Bonds with Augmented Mementos

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Abstract. This paper presents *Augmento*, a system which aims at providing individuals with an asynchronous approach of reinforcing the bonds with their relatives by sharing simulated emotions when they interact with mementos related to them. *Augmento* capitalizes on existing technologies to accomplish its goal, ranging from the usage of location based services, to the retrieval of the individual's physiological signals when interacting with the keepsake. Full background on the concept and the general workflow of the system are also provided.

Keywords: Affective Communication, Asynchronous Communication.

1 Background & Motivation

Recent studies indicate that individuals often recur to various approaches when they feel the need to communicate with their relatives or desire to evoke memories associated with them [4]. Several researchers have come up with different ideas on offering empowered ways of communication in order to convey emotions, thus making it a more personal process. State-of-the-art approaches are typically aimed at synchronous text and/or voice and video conversations which are enriched by external devices or algorithms. eMoto and Affective Diary are two elucidative examples [1]: the first builds on an extension to the SMS service to encompass background colors in the message to transmit some emotion to the receiver; Affective Diary allows individuals to write their own experiences coupled with automatically retrieved physiological data from external sensors. There are other systems which comprise complex facial emotion recognition algorithms and speech emotion recognizers [2] or even capitalize on actuators to simulate hugging and other tactile interaction patterns in synchronized distant conversations [3].

However, studies indicate that individuals with long-distance personal relationships care not only for this type of synchronous interaction between relatives, but other forms which comfort them. Among these are grasping specific objects or visiting special places. Individuals also state is it extremely refreshing to share each other's feelings in exchanges messages. However, most of the presented approaches rely on synchronous virtual meetings to communicate with each other. Since relatives are not always able to get in touch with each other, this leads to an increase in stress and

anxiety during those periods [5]. It is clear that current approaches do not offer solutions based on asynchronous communication paradigms and also they do not encompass the full extent of ways individuals arrange to get in touch with each other. One such solution relies on the usage of keepsakes or special places which are capable of stimulating or evoking memories about those relatives.

As such, this paper presents *Augmento,* a system which aims at providing individuals with an asynchronous approach of reinforcing the bonds with their relatives by sharing experiences when they interact with mementos related to them.

2   Augmento's Concepts

Augmento capitalizes on three aspects of modern mobile phones to accomplish its task: haptics (i.e. to simulate heart beat rate), location-based services (i.e. notifying relatives when users visit special places in which they shared experiences) and camera (i.e. to identify special objects through QR codes). In addition to these features, the system relies on external ECG devices to capture an individual's heartbeat rate.

Since sharing emotions is an integral part of a relationship, Augmento aims at replicating the captured heartbeat rate of a user near a special place or keepsake through haptics in the remote relatives' mobile devices. By using a client-server approach, Augmento processes physiological data locally, merely needing to send relevant values to the server. The remote relative's device is then able to translate the obtained values into vibration patterns mimicking the heartbeat rate. For privacy and power consumption concerns, the system is only activated in the vicinity of mementos previously identified by the individuals using their applications.

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