Squeeze the Moment: Denoting Diary Events by Squeezing

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Abstract
In this demonstration, we showcase *SqueezeDiary*, a novel mobile diary application that uses squeeze gestures for denoting instances of events. SqueezeDiary consists of a mobile phone and a small squeeze sensor that communicate over a Bluetooth connection. To record an event instance, the user simply squeezes the sensor, and the phone records memory cues for review later. SqueezeDiary provides features for users to swiftly record instances as they continue to live through the experience, and only reflect on the instances during their downtime.

Author Keywords
Mobile, Squeeze, Digital Diary

ACM Classification Keywords
H.5.2 [Information interfaces and presentation (e.g., HCI)]: User Interfaces – Input devices and strategies, Prototyping.

Introduction
Reminiscence allows people to reflect on their past [6]. To support reminiscence, we have seen a proliferation of research work in reminiscing technology, for example using a wearable camera for lifelogging [2, 3, 7] and digital diary tools [1, 4].

In this demo, we present a novel reminiscence tool, called *SqueezeDiary*. It uses squeeze gestures to denote life events/experiences that users want to keep a record of. The squeeze action triggers the application to record the timestamp, the location, and the squeeze pressure as memory cues. Figure 1 illustrates an example of our SqueezeDiary application. We designed SqueezeDiary so that the recording action is separate from review and reflection (or reminiscence). This provides the benefit that people can quickly record instances and continue with their original task, and only reflect on the instances later during their downtime.

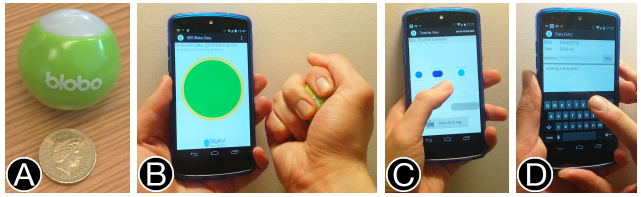

Figure 1: SqueezeDiary: (A) A Blobo squeeze sensor placed next to a British one pound coin. (B) A user squeezes and holds the sensor for a short duration to trigger an event instance. The instance is logged (along with location, temporal and squeeze pressure cues) on a mobile phone. (C) The user reflects on the recorded instance during their downtime, and (D) enters a diary description.

We envision that SqueezeDiary has multiple usage scenarios. For example, it can be used as a tourist diary. Tourists can wander around in a foreign city, and as they serendipitously discover local places of interest, they can quickly squeeze the sensor to keep a record of the location. The record can be reviewed later, and the user can see a sequence (or a trail) of places where they have visited during their trip. Alternatively, SqueezeDiary can be used as a diary tool for psychotherapy. Patients can squeeze the sensor when they are stressed (such as panic attacks), and later reflect on their mental state when they are calm and relaxed.

SqueezeDiary Prototype

For our prototype, we selected an off-the-shelf sensor component, called Blobo[1], as a squeezable interface. The device is in the size of a golf ball (41mm in diameter). It can be carried in a pocket, and users can squeeze it easily when needed, without accessing their smartphones. The sensor has a built-in force-sensing resistor for detecting pressure, and it interfaces with our application via BlueTooth. We customised our diary application based on the app developed by Simm et al. [8], and we implemented the SqueezeDiary application to run on Google Nexus 5 devices with Android OS version 4.4.2.

The interaction of SqueezeDiary can be divided into three phases (see Fig.2):

Record As a user lives through experience of interests, the user can use SqueezeDiary to record any particular events that she wants to keep a record of. A user simply takes out the Blobo sensor, and squeezes it to denote an event (see Fig.2 A, B). The squeeze action triggers the system to keep a record of the timestamp, the GPS location, and the squeeze pressure. The information is later used as memory cues to help the user to reflect on the recorded instances.

Review During the user's downtime, they can examine the records on a timeline view, a map view or a pressure view. On the timeline view, each event is denoted by a coloured dot (see Fig.2 C). A cluster of dots indicates that events occurred in a quick succession. The user can scroll

[1] http://serious-sports.org/content/blobo

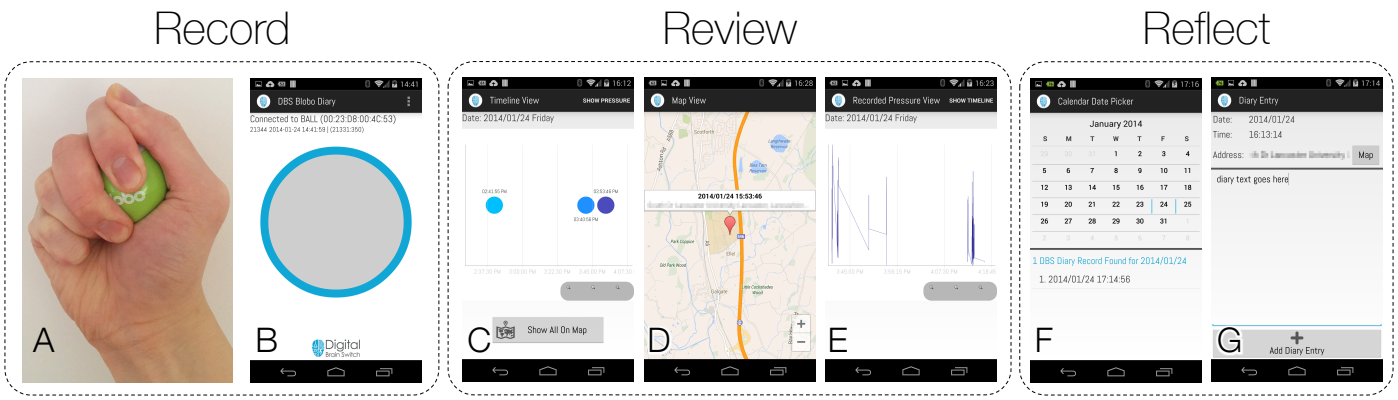

Figure 2: The three phases and screenshots of our SqueezeDiary application. (A) A user squeezes the sensor to to record an event. (B) *Main screen* with a blue circle indicates the Blobo sensor is connected, and turns green when it detects squeeze pressure. The user can later review and examine recorded events on a (C) *timeline view*, which shows recorded events on a timeline; on a (D) *map view*, with location pins showing where events were recorded; and on a (E) *pressure view*, which shows the intensity of recorded squeeze pressure. The user can also reflect on the records and provide a description of each event. The application also provides a (F) *calendar view*, which shows a list of diary entries for a selected day, and a (G) *diary entry* interface, which allows users to add diary detail information for a specific event.

through the timeline to view earlier or later events. On the map view, recorded events are shown as location pins (see Fig.2 D). The user can choose to view the location of a particular event or the locations of multiple events on a single map. Lastly, the pressure view shows squeeze pressure intensities over a time scale (see Fig.2 E). The user can zoom in on the pressure visualisation to see finer details.

Reflection (and Reminiscence) The user can further reflect on their experience by writing a description for individual events (see Fig.2 F,G). After a period of time, the user can revisit their past entries and descriptions, e.g. reminiscence by *technology-mediated reflection* [4].

Future Extensions

For future extension, we intend to extend SqueezeDiary input by using alternative squeeze sensors (e.g. the Skweezee System [9]). We also intend to assign different squeeze gestures for annotating different types of events. Using the tourist diary as an example, we can assign a gesture for historic sites, and another gesture for culinary sites, etc. Alternatively, we can explore the use of shake gestures to increase expressiveness.

Temporal and location cues support inferential memory processes [5]. To help improve memory recall accuracy, SqueezeDiary can be used in conjunction with lifelogging tools, such as visual cues for a better recollection of memories.

We have made our source code available online[2]. Researchers who are interested in SqueezeDiary are welcome to extend or customise the prototype for their own research purposes.

Demo Description

We intend to use the demo opportunity to gain valuable feedback from researchers. Prior to the demo session, we will pre-record some real diary entries. During the demo session, we will use the sample entries for explanation, and also invite attendees to experience using our prototype and to record some diary entries. We will then ask the attendees about their impression and discuss the features that we intend to include in our extensions.

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[2] `https://github.com/DigitalBrainSwitch/DBS_Blobo`