Initial Plan

A personal diary app

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Module Title: One Semester Individual Project

Credits: 40

Project Description

We are currently seeing a dramatic rise and use of ubiquitous computing and smarter devices that can interact with each other in new, interesting and increasingly useful ways. Applications for mobile communication devices such as smart phones are being developed to exploit the data these devices are producing, as well as content and data that users are generating themselves directly. This increasing volume of information is being used to create more dynamic applications, communicating with other programs and devices.

A diary is arguably one of the most personal activities a person can do, it stores a person's experiences, emotions and general observations about the events in their life. It is a record of a personal history and allows the author the ability to relive past memory's in detail for nostalgia, entertainment and probably most importantly self-reflection and to acknowledge and preserve personal development. So how can technology help improve and enhance this experience? One issue with a paper/pen diary is the lack of practicality of having the diary everywhere you go, this means later reflection may be incomplete or less accurate, especially if the entries are written a few days later. Having a mobile application that could record these experiences in the same way but be immediately available would help preserve the accuracy and completeness of the diary. When a user has access to the diary but is too busy to write an entry, it would be useful to have a way to help remind the user of where they have been and potentially what they have experienced, this would be possible through recording the places a user visits throughout the day. The user would gain extra benefit from a diary that could analyse and provide information based on their entries, hopefully providing the user some useful insights into their life they had never considered or noticed before.

User Location captured by mobile devices has become an increasingly important feature in multiple applications. Collecting current location enables applications to be reactive to a mobile user's situation, this is particularly important to applications that give direction or try and find specific entities "near" to an individual such as Google Maps[1], or applications that use this information for entertainment purposes such as Ingress[2] /Pokémon[3] go or Geocaching[4]. The ability to capture this information dynamically makes the application easier for the user and more accurate (where a user may have elsewise given an inaccurate location when prompted). Locational history can be used directly or analysed for further knowledge discovery about a user's routines and actions. An example of direct use of location history is Facebooks "Nearby Friends" application [5] that uses the location history of a user to influence its advert placement. One of the key benefits this gives the user is a more personally orientated application that directly uses their personal details to enhance their experience.

Given the emotive nature of a diary, it will be useful to offer the user a way to emotionally tag entries to allow the application to discover knowledge related to the positive or negative nature of entries. There are a number of examples of the use of emotion in user generated content, one example is the use of smilies/emoticons and an extension of this idea is to tag content with a set of emotions, for example, Facebook Reactions [6]. For a diary this would give enhanced ability to mine emotional information from entries and provide knowledge to the user of patterns between their routines, the places they visit and how they feel as a result of these actions, this information might be implicit and otherwise unknown to the user.

I intend to create a diary mobile application that will automatically use locational information to add context to entries. The application will also access the users locational history to remind/prompt them to add entries based on the places they have visited, possibly helping them to remember the details of their day when writing entries. A small range of emotional tags will be used to allow the

user to assign an emotional response to an event/entry providing the application with more useful information to analyse. The application will analyse locations and emotional tags to give useful information about the user's routines and patterns and present this via factual statistics and graphical displays.

Project Aims and Objectives

Aims:

Design and develop a personal diary mobile application on the android platform that utilizes user location and emotional tags. The application will help the user reflect on their experiences and offer statistical analysis and information for the purpose of learning about themselves and their routines.

Objectives:

- Design and develop a user interface that allows the user to:
  - Add a spontaneous diary entry at any time from the main menu, this entry will take the current location, time and date for its respective tags and only ask the user for a body and an emotional tag.
  - Present a user's locational history at request for a given day and allow the user to add diary entries for each instance.
  - Use Time and date to distinguish between separate events at the same location (on separate occasions) for a given entry.
  - Tag a given entry with an emotion to remind the user how they felt and also help the application provide interesting analysis for the user.
  - View the past Diary Entries they have made in a chronological order or by location.
- Develop methods to analyse the diary entries to:
  - Provide simple statistics regarding the emotions a user typically tags a location with.
  - Provide time/date information about a given location. For example, when did a user visit location x? What is the average time a user visits a location?
  - Provide information about the locations strongly associated with a particular emotion.
  - Present analysis in a number of helpful visual aids such as graphs and charts.

- Could Also (If time permits):
  - Give the user the ability to tag their entries with photos automatically generated from their library by matching up the time and dates of entries to their collection.
  - Give suggested routine changes that user can follow based on what locations/times give positive/negative emotions.
  - Test application with real users to test user interface design.

Initial requirements and constraints:

- The application will be developed on the Android platform.
- The application will have access to the user's location.
- The application will store location history data in a local database for later use.
- The application will allow the user to visually browse locational data for a given day and add entries to their diary by selecting locations.
- The application will automatically store diary entries with a time and date associated with each entries location. Multiple locations will be distinguished by this difference in Time/Date.

- The application will offer several pre-determined Emotional tags that will be defined through research prior to the development.
- The application will allow the user to add spontaneous entry's that will be automatically given the current location, date and time.
- The application will allow the user to view past entries via a visual board that can be arranged by chronological and locational order.
- The application will provide basic analysis of Locational, time/date and emotional data to provide the user with useful information.
- Results of analysis will be presented in a number of visual fashions including graphs and charts.
- The application will not use internet access.
- Diary Entries will be stored on the device allowing the diary to store data without needing access to the internet.

Work Plan

I will be using an Agile/Iterative development approach to this project, I will need to develop a further sense of who the user is and what the requirements will be to refine the design and implementation of the application. This will result in modification of the plan with further research, in particular when looking at the use of location and emotion tags and how these can be used effectively. A lot of the design process will be incremental and will require implementing smaller pieces one bit at a time and iterating the process to expand the system through testing. I will therefore document the development as it happens and as positive results or important conclusions are reached. Continuous meetings with my supervisor should help ensure that tasks are refined and added to help meet objectives and milestones.

Deliverables

- **Initial Plan**
- **Project Report**
- **Application Source Code**

Milestones

- **Report Introduction completed (except summary of results)**
- **Report Background completed**
- **Android development course completed**
- **Emotion research completed**
- **Location data method researched and decided**
- **Supervisor meeting 1 (checking user requirements and research development)**
- **Supervisor meeting 2 (regarding implementation plan)**

Week 1 (29th Jan- 4th Feb)

- Write project description and identify project goals and objectives.
- Create Work Plan.
- Compile initial plan.
- Research a suitable android application development course.

Deliverable - Initial plan 05/02/18

Week 2 (5th Feb – 11th Feb)

- Research Android application standards and considerations, write up justification and a brief summary of what was found.
- Research other existing solutions to the problem and related work.
- Write up of notable solutions currently available and justification of any solution or part of a solution we can use to help with the application.
- Start android development kit course.
- Identify and document the application user.
- Write up justification for android course chosen and how it will help.
- Report introduction and background started.

Week 3 (12th Feb – 18th Feb)

- Research possible ways to gather and use the user's locational data by looking for applications, API's and Packages that do this for the android platform.
- Research the use of emotional tags for diary entries.
- Engineering of User requirements.

Milestone - Report Introduction completed.

Week 4 (19th Feb – 25th Feb)

- Write up and justify choice of method to attain user location.
- Write up conclusions on emotional tag research and decide a set of suitable tags to use within the application.
- User requirements checked by supervisor.
- User requirements updated based on feedback from supervisor.
- Write up choice of Android/java versions that the application will support and a justification of these choices.

Milestone - Location data method researched and decided.

Milestone - Emotion research completed.

Milestone - Report Background completed.

Milestone – Supervisor meeting 1.

Week 5 (26th Feb – 4th Mar)

- Create use cases for the application.
- Create test cases based on Use Cases.
- Complete android development kit course.
- Start designing the user interface.

Milestone - Android development course completed.

Week 6 (5th Mar – 11th Mar)

- Finish design of user interface.
- Create UML class diagram and system modals.
- Data/database structures decided.
- Write up plan for implementation based on knowledge gained through research and planning and check with supervisor.

Milestone – Supervisor meeting 2

Week 7-9 (Including 3 weeks Easter break) (12th Mar – 22nd Apr)

Implementation of the system, due to the agile nature of development a detailed plan for development will be made and checked with the supervisor in week 6. This will include but is not limited to the following tasks:

- User interface
- Test methods, classes modules throughout (white box)
- Locational method integration
- Create database
- Classes for diary entries
- Classes and methods for analysis
- Classes/packages for displaying results and diary entries

Week 9 (16th Apr – 22th Apr)

- Finish Application coding.
- Check the application against test cases to establish if requirements have been adequately met.
- Black box testing of system components to ensure they are functional before integrating into the system.
- System tweaks.
- Integrate whole system.

Week 10 – 11 (23rd Apr – 6th May)

- Write up evaluation for the report.
- Write up potential continuation and future work for the report.
- Write up conclusion for the report.
- Write up reflection for the report.

Week 12 (7th Apr – 11th May)

- Check references, appendix and other additional content are created, formatted and complete.
- Proof read, edit and finish up report.

Deliverable – Project Report 11/05/18

Deliverable – Source Code 11/05/18

References

1. Google LLC. Maps - Navigation & Transport. Available at: https://play.google.com/store/apps/details?id=com.google.android.apps.maps&hl=en_GB

[Accessed: 04 February 2018].

2. Niantic Inc. Ingress. Available at: https://www.ingress.com/ [Accessed: 04 February 2018].

3. Niantic Inc. Homepage |Pokémon Go. Available at: https://www.pokemongo.com/en-uk/

[Accessed: 05 February 2018].

4. Groundspeak Inc. Geocaching. Available at: https://www.geocaching.com/play

[Accessed: 04 February 2018].

5. Josh Constine. 2014. Facebook Launches "Nearby Friends" With Opt-In Real-Time Location Sharing To Help You Meet Up | TechCrunch. Available at: https://techcrunch.com/2014/04/17/facebook-nearby-friends/

[Accessed: 03 February 2018].

6. James Titcomb. 2016. Facebook has changed the 'like' button to six different emotions. Available at: http://www.telegraph.co.uk/technology/2016/02/24/facebook-has-changed-the-like-button-to-six-different-emotions/

[Accessed: 03 February 2018].

Task ID	Description	29.01.18 Week 1	05.02.18 Week 2	12.02.18 Week 3	19.02.18 Week 4	26.02.18 Week 5	05.03.18 Week 6	12.03.18 Week 7	19.03.18 Week 8	26.03.18 - 15.04.18 Easter Break (3 Weeks)	16.04.18 Week 9	23.04.18 Week 10	30.04.18 Week 11	07.05.18 Week 12	11.05.18 Deadline
0	Initial Plan														
0.1	Write project description and identify project goals and objectives														
0.2	Create Work Plan														
0.3	Compile Initial Plan														
1	Introduction and Background Research														
1.1	Research a suitable android application development course														
1.1.1	Write up justification for android course chosen														
1.1.2	Complete Android application development course														
1.2	Research Android application standards and write up brief summary														
1.3	Research other existing problems to the solution and related work														
1.3.1	Write up of notable solutions available and how they may be used														
1.4	Find a method for acquiring user location data														
1.4.1	Research methods for acquiring users location on Android System														
1.4.2	Write up and justify choice for acquiring user location in the application														
1.5	Emotion Research Completed														
1.5.1	Research the use of emotional tags for diary entries														
1.5.2	Write up conclusions of emotional tag research														
1.5.3	Decide a set of suitable emotional tags to use														
2	Specification and Design														
2.1	Identify and document the application user														
2.2	Engineering of user requirements														
2.2.1	User requirements checked by supervisor														
2.2.2	User requirements updated based on feedback from supervisor														
2.3	Write up Java/Android versions that the application will support and justify														
2.4	Create Use Cases														
2.5	Create Test Cases														
2.6	Design User Interface														
2.7	Create UML Class Diagrams and system modals														
2.8	Data/database structures decided														
2.9	Write up plan for implementation based on research and planning														

Task ID	Description	29.01.18 Week 1	05.02.18 Week 2	12.02.18 Week 3	19.02.18 Week 4	26.02.18 Week 5	05.03.18 Week 6	12.03.18 Week 7	19.03.18 Week 8	26.03.18 - 15.04.18 Easter Break (3 Weeks)	16.04.18 Week 9	23.04.18 Week 10	30.04.18 Week 11	07.05.18 Week 12	11.05.18 Deadline
3	Implementation														
3.1	User Interface														
3.2	Locational method intergration														
3.3	Create database														
3.4	Class for diary entries														
3.5	Class and methods for analysis														
3.6	Class or packages for displaying results														
3.7	Class for displaying diary entries														
3.8	Integration of whole system														
3.8.1	Black box testing of system components to ensure they work														
3.8.2	Last minute coding changes to help intergrate system														
4	Results, Evaluation and conclusion														
4.1	Check application against Test cases to establish if requirements are met														
4.1.1	Write up results of test cases in the report														
4.1.2	Fix any minor problems that still exist in the system and re run test cases														
4.2	Write up report Evaluation														
4.3	Write up in report potential continuation or future work														
4.4	Write up conclusion for the report														
4.5	Write up reflection for the report														
4.6	Write up referances, appendix and other additional content														
5.1	Meeting 1														
5.2	Meeting 2														