Katchup: A Mobile Application for Time Management

Lin Haibin
University of Hong Kong
Email: u3502276@hku.hk

Chen Yiling
University of Hong Kong
Email: balling@hku.hk

Zhang Yixin
University of Hong Kong
Email: queeniez@hku.hk

***Abstract*—Katchup is a productivity application that allows users maintain a to-do list and track the time they spent on each to-do item.**

I. Introduction

In today's fast-paced society, people are getting busier, or more precisely, feeling busier. Research shows that in recent years the average high school student has the same level of anxiety as the average psychiatric patient back in 1950s[1]. Facing time pressure, many people tried multitasking but ended up wasting time in context switches[2]. To make things worse, with the increasing popularity of emails, social media and instant messages, people are now more likely to be interrupted or distracted. A work place case study in 2005 shows that in a typical IT work space, the working hour is broken down to fragments of 11 minutes on average[3]. As a result, although people feel they are working harder, the real working hour per week have actually been holding steady or even declining[4].

To address this problem, we built a time management application named Katchup. Katchup allows users to maintain a to-do list and track the time they spent on each to-do item. It also shows the time spent on the calendar so users can get an instant visual feedback of their time management which can be helpful in future planning and reviews.

The rest of this report is organized as follows. In Section II, some previous work in time management is discussed and compared with Katchup. Section III describes the functionalities and user interface of Katchup. The detailed implementation is presented in Section IV followed up user study in Section V. After discussion of future improvement, the conclusion is drawn in Section VII.

II. Previous Work

There are a lot of time management applications. The one closest to our work and the best is Jiffy.[9] It has a nice and clean interface design, it has summary of all recorded time. It seems to be a perfect application, but there are several aspects that we can do better than them.

1) *Pricing* Jiffy is free if you create no more than three projects. If you want to create more, you have to pay. Also, if you want to use more than three tags, you have to pay again. The biggest goal of our project, is to provide a totally free application for students and others to use.

2) *Scalability* Jiffy does not provide any scalability, meaning if you use this app on your mobile device A, then you cannot transfer the data into another device, say B. This is because user cannot do import and export with Jiffy. We implemented a basic import function, and will enhance this feature. For more information, please refer to *Future Work and Limitations*

3) *Task Priority* In Jiffy, all tasks have the same priority, meaning tasks are sorted only chronologically. While we implemented 'urgent' feature, that is, if user set a task to be urgent, or the deadline of the task is within three days (the task will be mark as urgent automatically), the task will have higher priority. We believe this feature will enable users to better arrange their time.

Honestly, there are other applications designed for time track as well. Some have only a beautiful interface, but is a mere timer; some are well designed in functionality but not in user experience; some, like Jiffy, are not free. Considering these, we carry out our project to improve current applications' drawbacks.

III. Usage

The screen cut in the centre of the flow chart is the home view(see figure1), it displays all tasks there; (c1) Switch in better to-do view and calendar view by tapping on the corresponding tab; (c2) In calendar view, user can pitch to zoom in and check detailed task layout or zoom out to have an overall view; (n1) Create new task by tapping on the second icon from right hand side on action bar, to go to the new task view; (n2) Click on button 'create task' will direct user to home view; (t1) Click on any of the tasks to go to the timer view. Click on the tomato image to start time-tracking; (t2) Click again to stop tracking and user will be directed to home view; (s) Tap on the first icon front the right hand side of the action bar to go to the setting view, user can turn off Wifi/Cellular here; after clicking the 'confirm' button, user will go back to home view; (d) Tap on the setting icon (on the right hand side of each task card) then a drop down menu will show up; The user can choose to either mark the task as complete or go to the edit view; (e) User can update the details of a task here in this view.

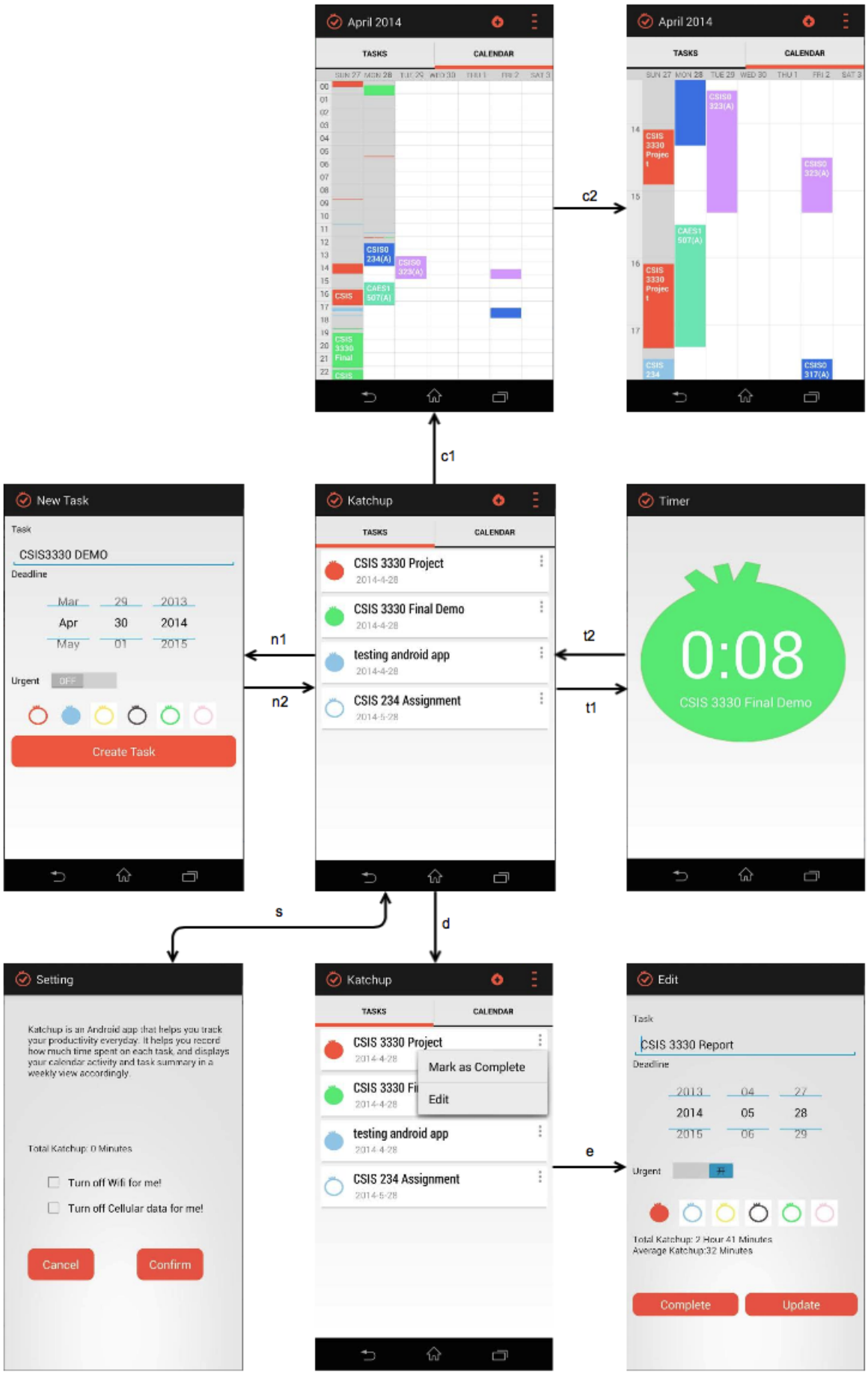

Fig. 1: Usage Flow

IV. Implementation

The call hierarchy of the classes in Katchup are shown in Figure 2. As shown in the diagram, MainActivity is the

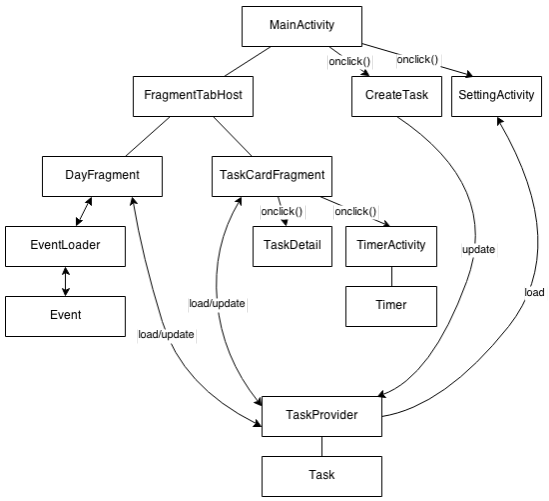

Fig. 2: Call hierarchy of the classes

entry point, which contains two fragment: TaskFragment and DayFragment. The content provider for this app contains all the task records involved, as in TaskProvider.

Every record in the database represent a task, with its id, title, task history, deadline, colour category, etc.

Task is the class to communication with TaskProvider, including update(), find() and insert().

When we want to create a new task, CreateTask Activity is started. A Task object is instantiated with the user input accordingly, then insert the record to TaskProvider.

Similarly, when we want to edit a existing task, a Task object is instantiated by retrieving all related field from TaskProvider. If any field is modified by the user, the Task object is updated, thus updating TaskProvider.

When a task item in the list view is clicked, TimerActivity is started. TimerActivity creates a task object accordingly, counts the time since user starts the task. When user finishes current task, one more history is added to the task object, which accordingly updates TaskProvider.

Every time the database is updated, TaskFragment populates a list of cards according to the task records retrieved from TaskProvider with the help of an external library called cardslib[5].

DayFragment, which displays the calendar events and time logged for each task, is modified from the day view of the original android calendar. Modifications include:

1) Removed all external dependencies.
2) Modified the minimum height of a display block to allow display of events shorter than one hour.
3) Added loader that loads the time logged for each task and display them with corresponding color blocks.

The EventLoader loads events in user's calendar for display in the DayFragment, thus user permission of accessing the calendar is needed.

As for setting view, SharedPreference is save according to users choice, which determines whether wifi/data will be turned off or not.

V. Results and Evaluation

We evaluate user experience from 4 perspectives: Utility, Usability, Aesthetics and Identification.

Consider the following user scenario: Tommy is a year-2 undergraduate, now doing revision for his coming final exams. He has several subjects to review and plans to spend most of his day studying. However, hes constantly distracted by Whatsapp messages, Facebook posts, friends calls and so on. With the help of Katchup, hes able to avoid disruptions coming from mobile phone and has a better picture of how he spends his time. However, he finds starting and finishing timer not so convenient, which is done by pressing buttons manually.

In terms of utility, the purpose of Katchup is to help users perceive their time management pattern and improve their work efficiency. The timer and the calendar functions fit for the purpose and are useful if users insist using Katchup to track for a week continuously.

However, the usability is limited in that remembering to start and stop tracking tasks can be quite a burden to some users. Smarter ways are expected to help track the time such as using gravity / light sensors to indicate work state(which however, leads to battery drain), instead of pressing the button every time.

From the perspective of Aesthetics, the UI is neat and pleasant, with cute icons in different colours.

Finally, how is the identification of Katchup different from others? Katchup adopts features from Todo-list to help you prioritise your tasks, it syncs with your calendar to manage events, meanwhile it summarise your time usage everyday. It serves to spot your efficiency pattern, which in turn help improve work efficiency. Thats something unique from the products in the market.

VI. Future Work and Limitations

There are several features that Katchup has not implemented by now. They are limitations temporarily, but they are also future work that will improve user experience.

1) *Calendar Import and Export* Currently, we only implemented import from Google calendar, but there is no special interface for this function.(If your mobile phone is connected to Google calendar, then your events will be imported automatically.) We will enhance this feature, not only design an interface for user to add events one by one, but also expand calendar provider list to iCal by Apple and other famous calendar platforms. Also we aim to provide an export function, so that users can store their previous records and import to other devices.

2) *Calendar View* In calendar view, although we can scroll and stretch, it only shows the task tag(color) and task name of the task, and we cannot start tracking via calendar view. We plan to add more functions into this calendar view, so that: 1. More information can show on calendar; 2. User can start time tracking or go to task detail page by clicking on the task shown in calendar; 3. Differentiate between tasks and marked time, so that user can get a better understanding of their time management situation.

3) *Tag* The current tag function allows users to categorize their tasks into one of the six categories. However, sometimes six types is not enough, and we also believe that adding another layer, that is to say, have category and sub-category, will be better.(*Eg. category: STUDY, sub-category: CSIS3330*) We will also allow user to choose set a color for each of the categories.

4) *Slide Gesture* For each of the task in the to-do list. If the user wants to edit the details of the task, then he/she can tap on the item, then a drop down menu will show up, then there is the setting item. Later on, we plan to further upgrade this part of user experience. We plan to implement slide gesture for each of the tasks. Plan: slide left - edit and mark complete button appears in the right part of the task card; slide right - turn urgent if not, and turn to not-urgent if the task is previously urgent.(switch between urgent and non-urgent)

5) *Statistics* This application falls in the category of productivity applications. The main purpose is to improve users time management ability. Thus, a good summary of the usage of the application will make the application more meaningful. We plan to add another interface for statistics, this will include the time efficiency for each task and overall, in line graph and pie graph, etc.

VII. Conclusions

In conclusion, we believe that Katchup help users get focused, avoid distraction, and identify pattern in their time spending habits. It tells users how much time they spent on each task and how fragmented their time is, which assists users in planning future tasks. The user interface is pleasing to the eye and the basic functions are well implemented. There still exist certain limitations in the current version of Katchup. Extra features and improved user work flow are expected to be added in future iterations.

VIII. Acknowledgment

The authors would like to thank Prof. Liyi Wei and Tutor Jun Xing for their generous help in this Android app course.

May 29, 2014

References

[1] Schulte, B. *Overwhelmed: Work, Love and Play When No One Has The Time*, Bloomsbury Publishing, 2014.

[2] Weissman, D. H., Roberts, K. C., Visscher, K. M. & Woldorff, M. G. *The neural bases of momentary lapses in attention*, Nature Neuroscience, 2006.

[3] Gloria Mark, Victor M. Gonzalez, and Justin Harris. *No task left behind?: examining the nature of fragmented work*, In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '05). ACM, 2005.

[4] Robinson, John P., and Ann Bostrom. *The overestimated workweek? What time diary measures suggest.* Monthly Labor Review, 1994

[5] https://github.com/gabrielemariotti/cardslib

[6] Viswanath, Bimal, et al. *On the evolution of user interaction in facebook.* Proceedings of the 2nd ACM workshop on Online social networks. ACM, 2009.

[7] Liu, Xingjie, et al. *Event-based Social Networks: Linking the Online and Offline Social Worlds*, Proceedings of the 18th ACM SIGKDD international conference on Knowledge discovery and data mining. ACM, 2012.

[8] Viswanath, Bimal, et al. *On the evolution of user interaction in facebook.* Proceedings of the 2nd ACM workshop on Online social networks. ACM, 2009.

[9] *Jiffy website.* http://jiffy.nu/