Time Planning Application with Voice Recognition to Assist Procrastinators in Managing Time

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Abstract

This paper studies the way of life of a procrastinator and its management of time. Procrastinator refers to human behavior who like to delay or postpone actions. Many studies have been conducted about how to overcome the act of procrastination. Majorly, they use psychological approaches that lead to motivation like forgive yourself, commit to the task, act as you go, minimize distraction, etc. According to the American Psychological Association, approximately 80% to 95% of college students procrastinate their college works. Since college students are very much close with technology, this paper attempts to overcome the procrastination with the help of current technology i.e. mobile apps. It is believed that time management is the core issue of procrastination so the mobile apps are developed as a personal time planning application using voice recognition technology to simplify the tasks. The significant feature of this app is that the procrastinator users (PU) does not require to type the commands into the mobile phones but just use voice as input. The Time Planning Application (TPA) translates the voice input into text input and create a simple time schedule accordingly. The notification of the scheduled tasks is provided so that the PU is always reminded about what task to do. By having simplification acts to create time management (using voice) plus a constant reminder, this paper attempts to motivate the procrastinator to manage their time better. The TPA is developed using Android studio with an online database attached to 000webhosting and PHP (Hypertext Preprocessor) scripting language for development.

Keywords

Voice Recognition, Voice Control System, Procrastination, Android Application

Introduction

Procrastination is very familiar to most people. Many causes related to this action which one of them is the inability to do things without a proper plan (Steel, 2007). People always neglect the activity of planning due to laziness and having a mindset that planning can consume a lot of time. Instead, people directly complete the delayed when the due time almost come (Van Eerde, 2003). In the worst case scenario, people complete the assigned activity at the very last minutes before the activity due. The awareness of proper planning seems difficult to achieve. Although many

people know that proper time planning is not only useful for completing a project or work but also to set a lifetime goal that has always been desired, this procrastination reminds constant challenge that needs a solution (Ellis & Knaus, 2007).

To overcome the procrastination problem, time planning application can be really helpful (Day, V & Mensink, 2000, Harriot & Ferrari, 1996). Time planning application takes the responsibility to help an individual in improving the time management skill (Kerzner, 2009). The application will analyze the input that is given by the individual and then generates a suitable time schedule for the individual. To make things work more easily, voice recognition technology is added as a special feature for the time planning application Olpin, (M. & Hesson, M., 2012) (Fleming, I. 2011).

Voice recognition, or more commonly known as speech recognition, is the current technology which allows a computer to read and study human voice or deliverance Sivasankaran, S. (2016), then translating the deliverance into text input (Schwarz, R., 2013). The text input let the computer or system to proceed to the desired action after the input has been recognized. Such actions can be in the computerized or physical frame, for example, passing information to another framework or activating associated hardware in reality.
The objectives of this paper are presented as follows:

1. To study the requirement of time planning application for procrastinators.
2. To develop a time planning application with voice recognition technology to simplify tasks of procrastinator users.
3. To conduct testing towards the acceptance of the proposed time planning application.

Methodology

The methodology applied to achieve the objectives are:

1. Requirement Gathering and quick design: Procrastinators demands things to be simple and easy, including the Time Planning Application (TPA). Hence, applying voice recognition technology to create a daily schedule on a smartphone will help procrastinators to start their day effectively. The procrastinators just use voice as input and the rest of the work will be done by the application. The quick design during requirement gathering is conducted to ensure the TPA is user-friendly for them.

2. Data collection and analysis: The qualitative and quantitative method is used at this stage. The qualitative research includes an interview with procrastinators to obtain an extensive detail on what is the challenge that they faced during time management and on what aspect do they consider the most. The interviewee will be randomly picked as this project is focused mainly on everyone. For quantitative research, the best fact-finding techniques to obtain statistical data is through the use of questionnaires. The questionnaires includes several expectations of the users towards the proposed TPA. The participants of this survey are a combination of random people as well as family and friends.

3. Development of TPA: using Android Studio with an online database and PHP scripting language, the TPA development is conducted.

4. Testing towards the proposed TPA: two types of testing has been delivered: black box testing that involves the procrastinator users and unit testing on the developer side. This paper presents the black box testing to know the acceptance level of TPA for the procrastinator users.

The following pictures are the interfaces of TPA for PU after the development stage is completed. Figure 1 is the home page of TPA that welcomes PU to use the features provided.
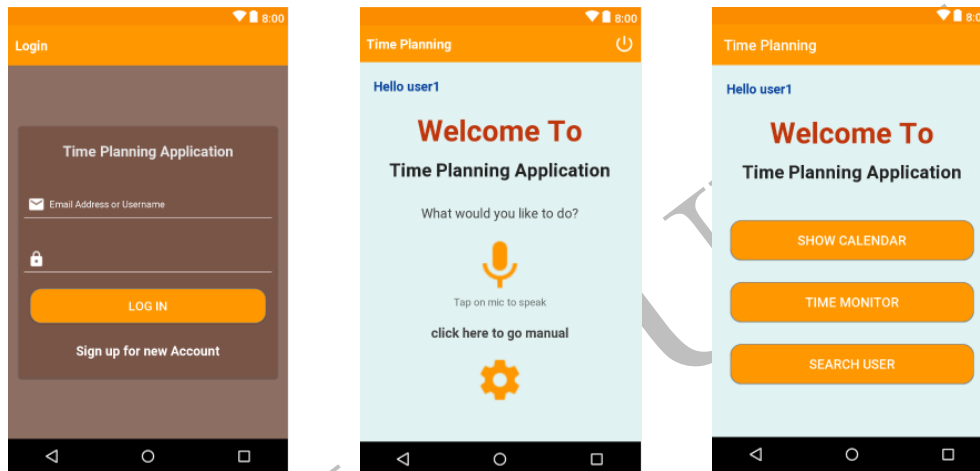

Figure 1. The Time Planning Application for PU

Figure 2 below is the interface after PU perform voice command to create activities or time schedule for daily or weekly activities. The voice recognition is able to create dates, month, year, start time, end time and event description. All commands use voice and the application convert the voice into texts.
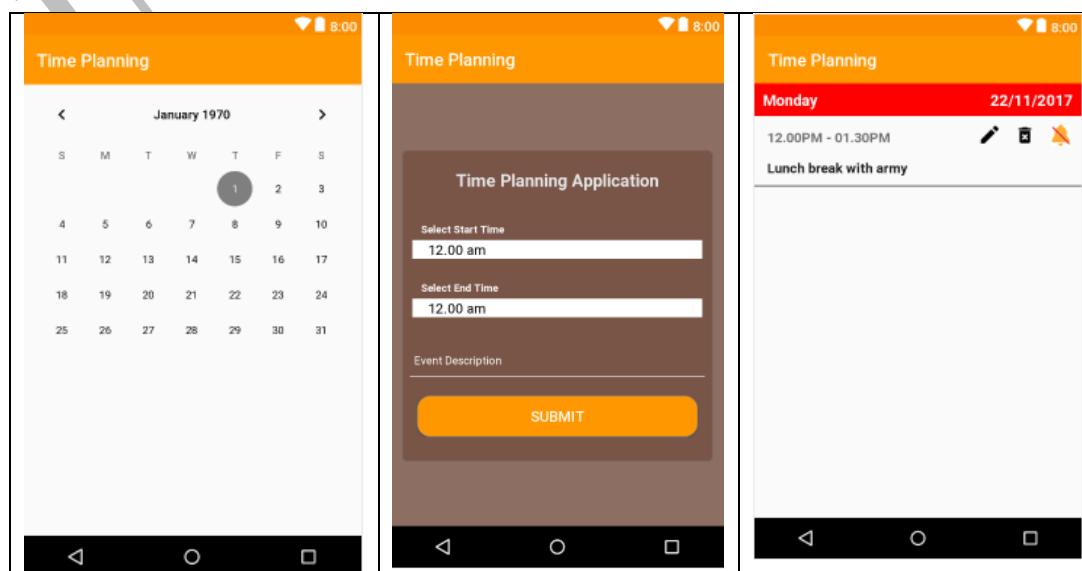

Figure 2. The schedules are created using voice command

The following figure 3 is the code extract part 1 to develop voice recognition using Android Studio. Afterward, figure 4 shows the code extract part 2 as a continuation of part 1.

```java
public void initSpeecRecognizationIntent() {
    speech = SpeechRecognizer.createSpeechRecognizer(MainActivity.this);
    speech.setRecognitionListener(MainActivity.this);
    recognizerIntent = new Intent(RecognizerIntent.ACTION_RECOGNIZE_SPEECH);
    recognizerIntent.putExtra(RecognizerIntent.EXTRA_LANGUAGE, "en-US");
    recognizerIntent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_PREFERENCE, "en-US");
    recognizerIntent.putExtra(RecognizerIntent.EXTRA_CALLING_PACKAGE, getPackageName());
    recognizerIntent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_MODEL, RecognizerIntent.LANGUAGE_MODEL_FREE_FORM);
    recognizerIntent.putExtra(RecognizerIntent.EXTRA_MAX_RESULTS, 3);
}
```

Figure 3. The code extract for voice input recognition

```java
ArrayList<String> matches = results.getStringArrayList(SpeechRecognizer.RESULTS_RECOGNITION);
        if (matches != null) {
            textView_error.setText("");
            isMicAvailable = true;
            imageView_mic.setBackgroundResource(R.drawable.mic);
            final String text = matches.get(0);
            if (text.equalsIgnoreCase("show calendar")) {
                if (speech != null) {
                    speech.cancel();
                    speech.destroy();
                    speech.stopListening();
                    speech = null;
                }

                Intent intent = new Intent(MainActivity.this, ShowCalendar.class);
                intent.putExtra("type", "add");
                startActivity(intent);
                //startActivity(new Intent(MainActivity.this, ShowCalendar.class));

            } else if (text.equalsIgnoreCase("Time monitor")) {
                if (speech != null) {
                    speech.cancel();
                    speech.destroy();
                    speech.stopListening();
                    speech = null;
                }
                startActivity(new Intent(MainActivity.this, TimeMonitorActivity.class));
            } else if (text.equalsIgnoreCase("Search user")) {
                if (speech != null) {
                    speech.cancel();
                    speech.destroy();
                    speech.stopListening();
                    speech = null;
                }
                startActivity(new Intent(MainActivity.this, SearchUser.class));
            }
```

Figure 4. The code extract part 2 for voice command recognition

In order to receive a voice command from the microphone, the Android Studio requires permission that has to set up in the function *OnClickListener*. The code extract for this part is shown in figure 5.

```java
mic_start_time.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        disableMic();
        mic_start_time.setEnabled(true);
        voiceInputField = 1;
        askForRecordAudioPermission();
    }
});

mic_end_time.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        disableMic();
        mic_end_time.setEnabled(true);
        voiceInputField = 2;
        askForRecordAudioPermission();
    }
});

mic_desc.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        // disableMic();
        mic_desc.setEnabled(true);
        voiceInputField = 3;
        askForRecordAudioPermission();
    }
});
```

Figure 5. Request permission from Audio

Results and Discussion

In this section, the results of user evaluation towards the TPA is presented in Table 1. There are 10 novice users involved in the testing stage and they have no idea about the TPA before. The feedbacks required includes interface design, the overall function of TPA, features provided, user manual, usefulness to TPA for procrastinator and any improvement requires.

The results show users are happy with the interface design, features offered and necessary functions provided in the TPA. All users agree not to have the user manual in using TPA because the features are simple and easy to use. 9 users said TPA is very useful for them and 7 users feel improvement is required for a better TPA.

User evaluation for the proposed Time Planning Application						
	Questions	Strongly Agree	Agree	Average	Disagree	Strongly Disagree
1	Is the interface design of the mobile application user-friendly and satisfying to be seen?	4	6			
2	Is the overall mobile application interesting for you?	5	5			
3	Does the mobile application provide the	7	3			

	necessary functions to overcome time management problem?					
4	Do you need user manual or clear instructions to understand how to use the mobile application?				6	4
5	Is the development of the mobile application helpful for you?	6	3	1		
6	Is there any space for improvement in the mobile application?			7	3	

Table 1. Results of User Acceptance Testing

Conclusions

The TPA has successfully developed to assist the Procrastinator users in managing their time. The main feature of TPA i.e. voice recognition indeed able to support and bring ease to the end user and motivate them to avoid actions of procrastination. This idea is implemented as a final year project in Bachelor of Computer Science (BCSI) in INTI International University, Nilai campus.

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