The PomBot Project Proposal

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1 Abstract

This paper proposes our semester project that improves the field of software engineering. We propose the PomBot: a Chrome extension that software engineers/developers can use to enhance productivity and stay attentive. Inspired by the Pomodoro Technique, the PomBot can be used by software engineers to track their work periods and breaks. By guaranteeing that users follow set work intervals, the extension encourages accountability and lessens mental exhaustion and burnout. More effective time management and task monitoring are made possible by the user's ability to change the amount of Pomodoro cycles and the tasks they want to complete.

2 Introduction

The field of software engineering requires prolonged periods of focus and a powerful attention span. These traits become particularly crucial with Agile methodology, with rapid development cycles that require efficiency. Additionally, attention and concentration have been claimed as reasons for higher quality code according to the study *Attention and Concentration for Software Developers* [1].

However, long periods of work are not conducive to efficient and productive task completion. Looking at a computer screen for long hours is counterproductive for software engineer/developer productivity. The Software Engineering field should adopt individual practices that demonstrate the importance of quick sessions of both focused work and restful breaks. This can be done with the Pomodoro Technique.

The Pomodoro Technique is a time-management method that includes a 25 minute work period (also referred to as a "Pomodoro") and a 5-minute break. After four cycles of this, one can take a longer break of 15-30 minutes. This technique breaks large tasks into manageable intervals.

This powerful technique led us to the PomBot - a chrome extension that integrates the Pomodoro Technique for developers. The PomBot can enhance focus by allowing software engineers to choose a specific task and working on them in 25 minute intervals with breaks.

3 Related Work

3.1 Research on the Pomodoro Technique

The Pomodoro Technique has been used as an efficient way of managing work time and break time. As mentioned earlier, it includes a 25 minute work period and 5 minute break (although these times can be altered based on your needs and personal work style; overall principle of Pomodoro still applies). An alternate option to Pomodoro technique is to self regulate breaks. This would involve software engineers to keep track of their work and break times on their own, without the help of a tool. According to the study *Understanding effort regulation: Comparing 'Pomodoro' breaks and self-regulated breaks*, having preplanned work and break periods significantly improved mood and productivity [2].

3.2 Existing Productivity Tools for Software Engineers

Our solution also took some inspiration from tracking tools that are currently available to software engineers. Below is a tool we researched.

TimeCamp: TimeCamp [3] is a project management tool that enables users to efficiently monitor their work hours, manage projects, and enhance productivity. It offers automatic time tracking reporting, and attendance management. These features are designed with the effort to improve workflow for all size teams. The software integrates with various applications. For remote teams, TimeCamp provides insights into productivity and simplifies attendance tracking. It benefits a swathe of industries, but particularly software. While this is not directly related to increasing developer productivity, it is another tool that some use to track their time usage and tasks, much akin to our solution. This product is more team focused than the PomBot.

4 Team Software Engineering Process

After discussing the advantages and disadvantages of various software engineering processes, our team has decided to utilize the Waterfall method for our project. This approach aligns best with our group requirements and individual capabilities. The project guidelines provide a clear understanding of the necessary requirements for this project, which is one of the core strengths of the waterfall method. Additionally, this method creates flexibility in our workflow due to its systematic development structure; a desirable attribute for college students with unpredictable schedules. Ultimately, we chose the Waterfall method for its clear requirements and flexibility, which best align with our project needs.

References:

[1] R. Amirova, G. Dlamini, A. Repryntseva, G. Succi, and H. Tarasau, "Attention and concentration for software developers," IEEE Access, vol. PP, pp. 1-1, Jan. 2023, doi: 10.1109/ACCESS.2023.3309414.

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[3] "Automatic Time Tracking," TimeCamp. https://www.timecamp.com/time-tracking/automatic-time-tracking/ (accessed Sep. 27, 2024).