Mindfulness of Time

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ABSTRACT
This timekeeping device is built from the ground up to promote more mindfulness of time.

Author Keywords
Time; timekeeping; well-being; time management;

INTRODUCTION
We often speak of not having enough time or needing more of it. We're bound time and our ability to manage time. Could we improve our well being by teaching ourselves to become more mindful of time? If we knew exactly how much we could achieve in a day, would we still over budget our time?

Personal well being is often tied to how well we manage and speculate on the time we have available within our day[1]. A device dedicated to promote mindfulness of time could help internalize our sense of time and decrease time management related stress.

POMODORO
The Pomodoro technique is a popular time management method that combines 25 minutes of focused work with 5 minute breaks. One of the most important parts of the method is the explicit act of time allocation and prediction.

By chunking time into 30 minute blocks, the technique allows us to quickly and easily create a mental model of how much work we might get done in a day. A key part of the technique is to predict how many pomodori (25 minute work + 5 minute rest) you will consume with each task or how many pomodori you might have available in a day once you factor in travel, meetings and other non-focused work time.

USAGE SCENARIO
Humans are predictive beings. Every thought and action we take comes with a predictive model of how we think things will turn out. This device makes that process explicit by the act of setting the time you think it'll take to do something and encoding it into the device. For example, to write this paper I allotted myself six 25 minute chunks. After finishing, we'll get to see how that prediction turns out.

Figure 1. Prototype Timer Device.

THE DEVICE
The Timer is a novel wearable device that sets the countdown timer as the primary interface while date and time are placed on the periphery. The device is a dedicated piece of hardware that is worn on the wrist to provide clear, but subtle and non-intrusive alerts to indicate when the timer has reach the end of its loop.

HARDWARE
A large knob encourages direct and physical interaction to create a sense of commitment and presents itself as an entry

1. Velleman, J. David (1991). Well-Being and Time. Pacific Philosophical Quarterly 72 (1):48-77.

point for people that might be drawn to tactile fixations. Spinning the knob activates a detented rotary encoder providing tactile feedback for incrementing the timer by 1 second to 30 minutes depending on the timer value.

A real-time chip maintains timing independent of the cpu to ensure timing accuracy of ±2ppm. A mini USB connection is provided to easily charge the battery. A vibration motor provides the primary output to alert the user. An Arduino compatible Atmega 328p chip acts as the main CPU. The 96x96 pixel memory display consumes 12uW.

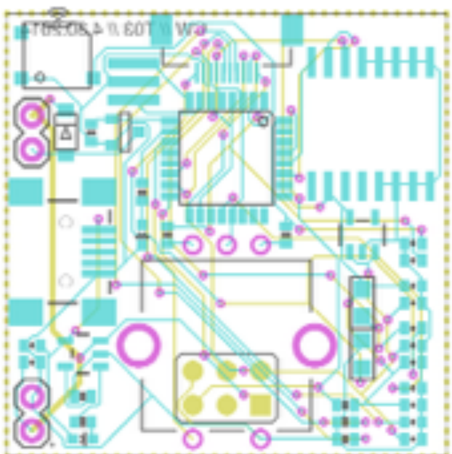

Figure 2. PCB Board Layout

SOFTWARE

The software is written in Arduino to ensure the device can be easily modified by a wide audience. Future versions of the watch could be customized to a specific users needs by modifying the source code and uploading it to the specific device. A sleep watchdog timer is implemented on the main CPU to run one cycle per second, unless the rotary encoder is active, to minimize power consumption. The display control is written specifically to interface with a memory display so each pixel is addressed individually without refreshing the entire display (saving power and time).

DISPLAY

A 96x96 monochrome memory display shows the current date and time in text as well as a progress bar that completes every 24 hours.

The primary progress bar (1) is a receding bar that indicates how much time is left relative to the start of the countdown timer. Below the countdown timer bar is the countdown shown in text (2) (Hours:Minutes:Seconds). The maximum allowable time for the countdown timer is 24 hours.

The bottom of the display shows the date and time (3) along with a progress bar that fills up over the course of 24 hours.

The top half of the display is a series of horizontal bar pairs that show the history of timers that have been set along with the relative stop time (4). The top bar of the pair shows the length of the timer where a 1 hour timer spans across the entire 96 pixels. The bottom bar of the pair shows when the stop button was pressed. If the timer stopped before the timer reached zero, the bar appears directly below with the bar above it (left justified). Or else, if the timer was stopped after the timer passed zero, the bar appears on the right side of the screen and increase in length toward the left as the timer continues to countdown past zero.

This history bar acts as a reference to adjust one's internal sense of time as well as a log to keep tabs on how much time was consumed on particular tasks.

Figure 2. 96x96 display interface

TIME SYNC AND SHARING TIME

In a future version of the device, I'd like to incorporate Bluetooth LE to enable the device to connect to smart phones, the device can log timing data and create a private time zone shared between a group of users.

CONCLUSION

I gave myself 6 chunks of 25 minutes to complete the 1st draft of this paper. It turned out, it took 3 one hour chunks, then four 25 minute chunks to get to this conclusion. The reality was far from what I predicted, but now I can adjust my internal sense of time. The next time I write a paper, I hope to give myself a more realistic prediction that will both encourage focus, and remove undue stress.

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