Abstract
The increased stress resulting from the COVID-19 pandemic has left students and workers feeling unmotivated to tackle challenging demands of the weeks ahead. Feelings of being overwhelmed have crept their way into our breaks, making it feel like a proper work-life balance is non-existent. This problem makes way for the new product Uplift, a motivational mat that displays upcoming events, reminding users what they have to look forward to during periods of seemingly never ending pressures. Through a series of interviews, observations, and usability tests, I recorded common morning habits and overall feelings, which helped inform the physical features and displays on the mat. Going forward, I aim to explore a wider range of sensory experiences upon stepping on the mat that can have effects greater than increased motivation. Uplift has contributed to the design of products that fit into many spaces and work to solve users individual needs.

Author Keywords
Motivation; Interactive Mat; Smart Technology; Morning; Relaxation; Mental Health

ACM Classification Keywords
H.5.2. Information Interfaces and Presentation (e.g. HCI): User Interfaces – Prototyping; User-centered Design.

Introduction
According to the American Psychological Association, studies have shown that 7 out of 10 adults report that
work increase has been a significant source of stress from the COVID-19 pandemic, as shown in Figure 2 [1]. Work-life balance ceases to exist during this strenuous period, as data shows that remote workers clock in an average of 60 extra hours per month [3]. In addition, while stress does not have a direct effect on job performance, it does have profound effects on motivation [4], and there is indeed a positive correlation between motivation and job performance [5]. Therefore, since individuals are working more hours under high stress, they have become less motivated due to constant demands. As a response to this problem, Uplift, an interactive mat, aims to reintroduce the work-life balance at home. As shown in Figure 1, when users step on the mat in the morning, it greets them good morning, displays the colors of a sunrise, and lists upcoming events that the user can look forward to in the coming days.

These visual elements, however, were the result of interviews, studies, and many iterations. Therefore, when initially researching inspiration for interactive mats and overall competition for this idea, I came across 3 products worth noting. First, the Yi interactive yoga mat shown in Figure 3 successfully utilizes moving lights in its surface to guide users through yoga positions [6]. Second, Ruggie is an alarm clock that only shuts off when the user stands on it [7]. It also uses LED technology to display the time on the surface of the mat and uses similar weight sensing technology to Uplift. Third, I looked to i-Mat, the play mat for children [8]. This mat has illustrations of multiple animals labeled with their name, to help children aged 18 months and over better identify animals and develop their vocabulary. Elements that I took away from this product was the use of visuals and how impactful they can be to the right in the right setting. While all these examples are useful, Uplift demonstrates a more holistic sensory experience including its plush material, as well as graphic and text displays. In addition, the need for handsfree technology is becoming increasingly important as research has shown that people often are juggling many things during their morning routines [9]. Uplift is placed next to the user’s bed, meaning there are no added steps to using this product besides waking up and experiencing the benefits.

Early Design (Low-fidelity Prototype)
When I began the design process, I initially concluded that if individuals do not have enough motivation, then they also don’t have enough energy to complete tasks. With this, I discovered that regular, low-intensity exercise can help boost energy levels [10], and that the main feature of my mat would encourage users to stretch. In addition, people are more likely to exercise if receive some motivation [11]. As shown in Figure 4, the mat displays a set of hands after the user steps on it and goes away once the user touches it.
While my initial scenario fits the use of this feature, my persona is more aligned with the general type of person I’m aiming to design for. Rosalia is a college senior working from home, currently working on her senior thesis and trying to balance it with a full course load. The stress of her assignments and inability to see her friends during her last year of college has left Rosalia feeling unable to finish strong.

**Scenario**
The steps of my scenario are very straightforward but is heavily associated with this initial design idea of stretching in the mornings. First, our persona Rosalia wakes up feeling overwhelmed and dreads the demanding week ahead of her. Then, she steps out of bed and onto her Uplift mat, which signals her to reach down and stretch. Because Rosalia started off her morning stretching, she has more energy and motivation to complete her assignments.

**Evaluation (Low-fidelity Prototype)**
Conducting early observations and interviews proved to be crucial in realizing where my low-fidelity prototype fell short. While observing classmates walk me through how they would interact with the product, I realized that not everyone would physically be able to touch the mat, which decreases accessibility greatly. After being skeptical about including exercise in this mat, I conducted interviews with questions targeted towards my concerns. What I found was that users were confused on what to do after touching the mat and admitted that they’re not fond of exercise in the morning, meaning they’d easily ignore the mat. With this new information, I had 3 major takeaways:

- Uplift should not be centered around exercise.
- Uplift should add no extra steps to someone’s morning routine.
- Uplift should include a variety of sensory experiences.

**Design (High-fidelity Prototype)**
After considering new forms and functions of my mat in a morphological chart (Figure 5) such as whether the output will be to display a motivational quote, the weather, or a daily to do list, I selected top choices and built my first (of two) high-fidelity prototypes. With foam board, a black t-shirt, an iPhone, and a light sensor from an Arduino board I put form to how my product would work (Figure 6). I knew that when the user stepped on the mat, I wanted some visual display to occur (red light), and for the mat to list events that the user had to look forward to, based on what they inputted through a corresponding app. Afterwards, I created a more refined prototype as shown in Figure 7, with a more pleasing light display. In Figure 8, notice the examples of what an Uplift mat would say to someone in the morning.

**Evaluation (High-fidelity Prototype)**
I conducted two indirect observations by giving my final prototype to two classmates to use for 48 hours, with the goal of obtaining more opinions on the content displayed (upcoming events), and overall feelings. One reported that the mat was easy to use and gave her something to look forward to. She also said that by day two, when she woke up, she was expecting to encounter the mat before even getting out of bed. The other said that throughout the day, they anticipated the event that they were reminded of in the morning. The
main takeaway from these observations was that the Uplift mat had lasting effects on users outside of the morning interaction, which is beneficial in maintaining positive thoughts and increasing motivation. One critique that they both had, however, was that they wish there was more going on visually, since all they got to see was the perimeter light up and text display (Figure 7). As a result, I considered adding more visuals, but needed them to be fitting. After doing research, I verified that sunlight has been linked to increased moods and energy [12], so I added a gradient sunrise visual to the mat as soon as users step on it (Figure 1). With these new changes, I had 5 people participate in usability survey to get final feedback on Uplift.

Figure 7: Final prototype with LED lights and a screen in the upper right corner.

Figure 8: Up close shot of the text displayed when user steps on the mat. There’s a countdown with events in the upcoming days.

Figure 9: Usability survey shows high scores in positive product characteristics.

Figure 10: Usability survey shows low scores in negative product characteristics.

Figure 11: Usability survey short response questions show that users are in favor of the sunrise feature.
Figure 12: Usability survey short response questions show that there is a wider possibility for sensory stimulation within the Uplift mat.

Discussion of Results
My usability survey in Figures 9 and 10 told me that my product was rated very high in terms of its usability. Figures 11 and 12 provides insights into what exactly users like and would improve upon, like keeping the sunrise gradient and next time exploring what other factors I could display on the mat. Overall, Uplift was successful in using events to look forward to in order to motivate people.

Future Work
In the future, I would love to explore a wider array of sensory experiences as mentioned before. I’m considering what happens to the physical surface of the mat as you step on it, and how there are texture and shape changing devices to look to for inspiration. In addition, if the mat produced a certain noise when the user moved a certain way, it might encourage the user to keep moving that way, promoting energy. There are multiple possibilities to add to this mat, so my final prototype was limited to what I could create myself.

Contribution
Uplift is not just a motivational morning mat, it’s a product intentionally placed along the users’ everyday routine, requiring no extra effort to use. The idea of having something to look forward to is practiced by many but has been easily forgotten during these stressful times. Designers can greatly benefit from this concept of providing users with the best morning experience to set the course for the rest of the week. Thinking beyond just the scope of what Uplift accomplishes, this product can serve as inspiration for other reminders people need on a daily basis such as medicine or to-do lists. If we consider the range of possibilities, this product can be used for all different target groups and make the difference that I always knew it would.

References


