Design Documentation





CGT 17208 25 APRIL 2024

Team: Alex Lee Colten Lewis Simeon Hackett Zachary Fischer Zack Wang

TABLE OF CONTENTS INTRODUCTION INITIAL DESIGN PROCESS SECONDARY RESEARCH DATA ANALYSIS DESIGN EXPLORATION MENTAL MODELS & SCENARIOS PROTOTYPING & EVALUATION CONCLUSION CONTRIBUTIONS

REFLECTIONS SOURCES APPENDIX A: INTERVIEW PROTOCOLS

INTRODUCTION

Project Objective

The primary objective of this project is to develop a modified activity tracker application that connects to basic wearable devices and encourages users to engage in behaviors that are genuinely beneficial to their health. By redefining the metrics and goals within the activity tracker, the project seeks to reshape users' mental models of what activities are genuinely beneficial and to systematically reward those behaviors over common "cheats" or less effective health activities/increase physical motivations.

• Deliverables

- Research Summary: A document summarizing the findings on activity tracking, mental models, and behavior change.
- Design Insights: Key insights drawn from research, formatted as a clear guide for the application development.
- Prototype Display: A collection of prototype iterations with images and notes highlighting the design evolution.
- Evaluation Synopsis: A concise report on the testing and refinement of the application, outlining the methods and key findings.
- Al Tool Reflection: A brief account of the experience with Generative Al tools and their impact on the project.
- Presentation Materials:
 - A multimedia element to support the final presentation.
 - A narrative document linking the process and final design for an audience.
- Portfolio Entry: A portfolio post with visuals and text detailing the project's development and final results.

INITIAL DESIGN PROCESS

Ideation

Initial project ideas included things like competitive racing apps, better algorithmic applications to detect cheating, social route/gathering applications, and more localized delivery applications (fitness tracking).

Interviewing Phase

At this point in the project, our goal was to conduct interviews with a variety of different users to gain a better understanding of the overall problem space of fitness trackers. End goal was to gain more empathetic data to craft a more honed in problem space, statement, and design questions. Questions and protocols included:

- Do you have a fitness-tracking watch?
 - If so, why do you have it, and what do you use it for?
 - If so, what problems do you have with it?
 - If so, do you have a personal taste for what
 - If not, why don't you have a fitness-tracking watch?
- What forms of fitness do you engage in the most?
 - If none, what are the reasons why you don't engage in more fitness-related activities?
- How do you set your goals and what are the main things you look at when fitness goal setting?
 - If so, what motivates you to engage in fitness activity?
- Personally, what is your definition of fitness?
- In your fitness journey, what are some of the struggles you have faced?
- If you have ever not wanted to or not been able to exercise, what was/were the reason(s)?



2

Interview I

Interviewee: Elle, Junior at Purdue University Interviewer: Colten

Key Takeaways:

- The most they use their fitness watch (an Apple watch in this case) is when they go on walks with their significant other or dog.
- They don't decide to engage in more fitness activities due to lack of time and motivation. Also doesn't know where to start besides Yoga (what they are used to).
- She used to go to the GYM a lot more in 2022/2023 but got sick and lost the motivation to go anymore after recovery. Wanted to improve her running skills.
- Main Takeaway: Any activity that she engages in most of the time, seems to be in a more social setting with friends or loved ones.

Interview II

Interviewee: Kaylee, Senior at Purdue University Interviewer: Colten

Key Takeaways:

- Uses a fitness watch (an Apple watch) to quickly read notifications and track more basic fitness metrics like steps for that day, heart rate, and calories burned.
- Most of her activity comes from "naturally" getting her steps in from things like walking to class and leisure activities with friends rather than directly her workouts in intentional environments like the GYM.
- Talked about her first experience with a fitness watch (which was a step counter/calorie burn estimate) and cheated with it just to have higher numbers for a type of false self-gratification. Now she bases her true progress on distances walked rather than steps taken.
- Main Takeaway: Most credit concerning physical activity comes from when they are with friends engaging in more activities like leisure volleyball, walks, or just going out to different places. The watch is used less for fitness but when it is used for fitness its used for more of an "end of the day" gratification metric.

Interview III

Interviewee:

Interviewer: Andrew

Key Takeaways:

- Prefers to engage in fitness activities (swimming, table tennis, tennis) casually and socially rather than tracking with a device.
- Fitness is seen as a means for stress relief and social interaction, not goal-driven.
- The participant's definition of fitness is centered on health and well-being, not on specific performance metrics.
- Experiences with exercise indicate a disinclination to cheat when in a social setting.
- There is an aversion to regimented fitness routines, citing past experiences of cheating during mandatory exercise
- programs.
- Main Takeaway: The participant values the social and stress-relief aspects of fitness over structured goal-setting or data tracking, indicating a potential focus on communal and feel-good elements for fitness watch design considerations.

Interview IV

Interviewee: Anonymous College Student

Interviewer: Simeon

Key Takeaways:

- The participant owned a fitness watch but stopped using it due to underuse and functionality issues, like not being able to read the time.
- Weightlifting is the chosen form of exercise, motivated by enjoyment and the desire to be strong, rather than by specific goals.
- Defines fitness as engaging in activities that improve or maintain health.
- Challenges in their fitness journey include motivation dips, especially during illness.
- Admits to occasionally taking the easy route in exercise, such as not completing a full set or rep.
- Main Takeaway: The participant's experience highlights the importance of usability and relevant features in fitness watches, and suggests that personal enjoyment and intrinsic motivation are significant factors in maintaining a fitness routine, more so than data tracking or goal setting.

SECONDARY RESEARCH

"Providing a Rationale in an Autonomy" - Supportive Way as a Strategy to Motivate Others During an Uninteresting Activity" - The article explores how extrinsic motivation, when paired with autonomy support, can significantly enhance community engagement in urban planning by aligning incentives with community values, thereby fostering a sense of ownership and sustained participation.

"Exergaming, Exercise, and Gaming: Sharing Motivations" - This study investigates the motivational overlaps between traditional exercise, video gaming, and exergaming, suggesting that focusing on enjoyment, health benefits, and social interactions can significantly increase participation in physical activities through gaming. "Making Activity Recognition Robust against Deceptive Behavior" - Saeb, Körding, and Mohr discuss improving activity recognition systems to detect deceptive behaviors, such as faking exercise, showing that including deceptive data can enhance system accuracy and robustness.

"Cheating More When the Spoils Are Split" - Wiltermuth's research examines how the likelihood of cheating increases when individuals can share the outcomes of their dishonesty, suggesting that shared benefits make unethical behavior seem less immoral.

<u>"Making Activity Recognition Robust against Deceptive Behavior"</u> - The study by Saeb, Körding, and Mohr (2015) investigates making activity recognition systems robust against deceptive behavior, such as individuals faking physical activities to benefit from health insurance discounts. They developed a smartphone application that collects accelerometer and gyroscope data to classify activities as sitting or walking. Fourteen participants were asked to trick the classifier into misidentifying their activities. If successful, their data were used to retrain the classifier, and the process was repeated. The initial classifier had about 38% accuracy in identifying true activities, but after including data from deceptive behaviors, accuracy increased to approximately 84%. The study suggests that including deceptive activity data from a few individuals can significantly improve the system's robustness against similar deceptive behaviors by others.

"Careful Cheating: People Cheat Groups Rather than Individuals" - This article reveals that people are more inclined to cheat when the victim is perceived as a group rather than an individual, especially if the harm to the group is presented in broad terms, highlighting the psychological nuances of ethical decision-making.

"The effectiveness of a virtual fitness trainer app in motivating and engaging students for fitness activity by applying motor learning theory." - This article goes through an experiment where students were tasked with using fitness apps, and they measured the effectiveness of the app on improving the said students' fitness. The study revealed that fitness apps do help improve fitness with a virtual trainer, and one of the stipulations for the apps to work was the participants needed to be willing to use the app. If they are not willing to use the app then the app will not be nearly as effective.

"<u>Geofit: Verifiable fitness challenges</u>"- This study reveals ways that people who use fitness apps cheat, and one example of a fitness app that overcame people cheating. Geofit, an app that introduces challenges for rewards used different technology to make sure that people were not cheating their app. Some things used were accelerometers and gps trackers to make sure people were going at a reasonable human pace.



PUT IN NEW SUMMARY PUT IN NEW SUMMARY

DATA ANALYSIS

After analyzing the interviews with all the potential stakeholders we came up with the following:

USER GROUP

This user group comprises adults living in densely populated areas where locations are within walking distance.

PROBLEM STATEMENT

Modern adults struggle with hardcore fitness motivation and direct physical exercise despite having direct metric methods of measuring progress while more natural and social physical activities are more engaged in.

DESIGN QUESTION

How might we design a fitness tracking solution that resonates with adult individuals by emphasizing social engagement and enjoyment in physical activity, rather than focusing solely on metrics and rigorous exercise routines?

DESIGN EXPLORATION

IDEA

A feature within food delivery apps that tracks a user's steps, similar to a fitness tracker. This innovation wouldn't just count steps for health metrics but could also translate physical activity into currency or points within the app, offering monetization incentives such as discounts, vouchers, or loyalty points for users who choose to walk to pick up their orders. Furthermore, integrating a social component where users can challenge friends or join community leaderboards could foster a sense of community and friendly competition. This gamification could spur users to be more active, leveraging the routine act of ordering food as an opportunity to encourage healthier habits, promote social interaction, and create a fun, engaging user experience that extends beyond the mere transaction of ordering food.

Expanding on the initial concept, we could implement a smart algorithm within the food delivery app that not only tracks steps but also analyzes and suggests optimal walking routes for users to pick up their orders. This algorithm would take into account the user's current location, the pickup location, and historical walking data to recommend the most efficient and enjoyable paths. It could factor in variables such as pedestrian-friendly routes, scenic pathways for an enhanced walking experience, and even user preferences like avoiding hills or busy streets.

As users walk these suggested routes and accumulate steps, they'd earn rewards, further encouraging walking as a mode of pickup. This system could also learn from community data, improving its route recommendations based on the paths frequently traveled and favored by the app's community of users. This collaborative element not only makes the individual experience better but also contributes to a larger data set that benefits all users, creating an evolving, intelligent network of optimal pickup pathways. The social incentives, combined with the smart route optimization, aim to contribute to a healthier lifestyle, more sustainable living, and a connected community – all facilitated by a seamless integration within the everyday activity of ordering food.

MENTAL MODELS & SCENARIOS

MENTAL MODELS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi. Sit amet nisl purus in mollis nunc. Elementum eu facilisis sed odio morbi. Est velit egestas dui id ornare arcu odio. Est lorem ipsum dolor sit amet consectetur. Tellus cras adipiscing enim eu turpis egestas pretium. Adipiscing elit ut aliquam purus sit amet. Nisl nisi scelerisque eu ultrices vitae auctor eu augue ut. Tincidunt praesent semper feugiat nibh sed pulvinar proin gravida. Non quam lacus suspendisse faucibus interdum posuere lorem ipsum. Tristique risus nec feugiat in fermentum posuere urna nec.

SCENARIOS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi. Sit amet nisl purus in mollis nunc. Elementum eu facilisis sed odio morbi. Est velit egestas dui id ornare arcu odio. Est lorem ipsum dolor sit amet consectetur. Tellus cras adipiscing enim eu turpis egestas pretium. Adipiscing elit ut aliquam purus sit amet. Nisl nisi scelerisque eu ultrices vitae auctor eu augue ut. Tincidunt praesent semper feugiat nibh sed pulvinar proin gravida. Non quam lacus suspendisse faucibus interdum posuere lorem ipsum. Tristique risus nec feugiat in fermentum posuere urna nec.

PROTOTYPING & EVALUATIONS

PROTOTYPING

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi. Sit amet nisl purus in mollis nunc. Elementum eu facilisis sed odio morbi. Est velit egestas dui id ornare arcu odio. Est lorem ipsum dolor sit amet consectetur. Tellus cras adipiscing enim eu turpis egestas pretium. Adipiscing elit ut aliquam purus sit amet. Nisl nisi scelerisque eu ultrices vitae auctor eu augue ut. Tincidunt praesent semper feugiat nibh sed pulvinar proin gravida. Non quam lacus suspendisse faucibus interdum posuere lorem ipsum. Tristique risus nec feugiat in fermentum posuere urna nec.

EVALUATIONS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi. Sit amet nisl purus in mollis nunc. Elementum eu facilisis sed odio morbi. Est velit egestas dui id ornare arcu odio. Est lorem ipsum dolor sit amet consectetur. Tellus cras adipiscing enim eu turpis egestas pretium. Adipiscing elit ut aliquam purus sit amet. Nisl nisi scelerisque eu ultrices vitae auctor eu augue ut. Tincidunt praesent semper feugiat nibh sed pulvinar proin gravida. Non quam lacus suspendisse faucibus interdum posuere lorem ipsum. Tristique risus nec feugiat in fermentum posuere urna nec.

CONCLUSION

SUBTITLE

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi. Sit amet nisl purus in mollis nunc. Elementum eu facilisis sed odio morbi. Est velit egestas dui id ornare arcu odio. Est lorem ipsum dolor sit amet consectetur. Tellus cras adipiscing enim eu turpis egestas pretium. Adipiscing elit ut aliquam purus sit amet. Nisl nisi scelerisque eu ultrices vitae auctor eu augue ut. Tincidunt praesent semper feugiat nibh sed pulvinar proin gravida. Non quam lacus suspendisse faucibus interdum posuere lorem ipsum. Tristique risus nec feugiat in fermentum posuere urna nec. Nam libero justo laoreet sit amet cursus sit amet. Odio eu feugiat pretium nibh ipsum consequat nisl. Sapien nec sagittis aliquam malesuada bibendum. Amet nulla facilisi morbi tempus. Nam aliquam sem et tortor consequat id porta nibh. Nulla porttitor massa id neque aliquam vestibulum morbi blandit. Eget mi proin sed libero enim sed faucibus. Arcu cursus euismod quis viverra nibh cras. Id interdum velit laoreet id. Magna eget est lorem ipsum dolor sit amet. Cursus in hac habitasse platea. At tempor commodo ullamcorper a lacus vestibulum sed arcu non. Nibh praesent tristique magna sit amet purus gravida quis. Vel fringilla est ullamcorper eget nulla facilisi etiam dignissim diam. Maecenas pharetra convallis posuere morbi leo urna molestie at. Non arcu risus quis varius quam quisque id diam. Sed arcu non odio euismod lacinia at quis risus. Vitae semper quis lectus nulla at volutpat diam ut venenatis. Adipiscing commodo elit at imperdiet dui accumsan sit. Urna porttitor rhoncus dolor purus non enim praesent. Urna et pharetra pharetra massa massa ultricies mi quis. Blandit aliquam etiam erat velit scelerisque in dictum non consectetur. Ipsum dolor sit amet consectetur. Ullamcorper morbi tincidunt ornare massa eget egestas purus. Posuere sollicitudin aliquam ultrices sagittis orci. Nisl tincidunt eget nullam non nisi est sit amet. Suspendisse ultrices gravida dictum fusce ut placerat orci nulla pellentesque. Commodo viverra maecenas accumsan lacus.

CONTRIBUTIONS

ALEX LEE

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

COLTEN LEWIS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat

imperdiet sed euismod nisi.

SIMEON HACKETT

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

ZACHARY FISCHER

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

ZACK WANG

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

REFLECTIONS

ALEX LEE

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

COLTEN LEWIS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat

imperdiet sed euismod nisi.

SIMEON HACKETT

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

ZACHARY FISCHER

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

ZACK WANG

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Porta non pulvinar neque laoreet. Ante in nibh mauris cursus mattis molestie a iaculis. Tincidunt praesent semper feugiat nibh sed pulvinar. Id porta nibh venenatis cras sed felis eget velit aliquet. Egestas erat imperdiet sed euismod nisi.

SOURCES

WORKS CITED

Amir, A., Kogut, T., & Bereby-Meyer, Y. (2016). Careful Cheating: People Cheat Groups Rather than Individuals. Frontiers in Psychology, 7. https://doi.org/10.3389/fpsyg.2016.00371.

Osorio, G., Moffat, D., & Sykes, J. (2012). Exergaming, Exercise, and Gaming: Sharing Motivations. Games for health journal, 1 3, 205-10. https://doi.org/10.1089/g4h.2011.0025.

Reeve, J., Jang, H., Hardré, P., & Omura, M. (2002). Providing a Rationale in an Autonomy-Supportive Way as a Strategy to Motivate Others During an Uninteresting Activity. Motivation and Emotion, 26, 183-207.

https://doi.org/10.1023/A:1021711629417.

Saeb, S., Kording, K., & Mohr, D. (2015). Making Activity Recognition Robust against Deceptive Behavior. PLoS ONE, 10. https://doi.org/10.1371/journal.pone.0144795.

Wiltermuth, S. (2011). Cheating more when the spoils are split. Organizational Behavior and Human Decision Processes, 115, 157-168. https://doi.org/10.1016/J.OBHDP.2010.10.001.

APPENDIX A: INTERVIEW PROTOCOL

Below is a link to a Google Document including the protocol we used for our interviews. These questions were created and compiled to inform us of fitness watch users' experience with the watches themselves, their fitness journeys, and influencers/encouragers of cheating.

Additionally, interview transcripts can be found below

Interview Protocol

Simeon Hackett Interview

Zack Wang Interview

Colten Lewis Interview