By Sheng-Hung Lee

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Revisiting My Self-Quarantine Experience through a Data-Driven Approach

THE MASSAHUSETTS INSTITUTE OF Technology (MIT) has adopted a set of data-driven and scientific approaches to meet the challenges brought on by Covid-19. Those who live on campus, work for the labs, workers, security guards, and others who have access to the school are required to take a Covid-19 test twice each week in order to gain COVID Pass, a virtual identity allowing access to designated facilities and buildings (Figure 1). According to information from the Massachusetts government, the MIT campus and student dorms are relatively safe places to work and live.

My journey begins: COVID Pass red alert

Even though I was living in this relatively safe environment, just before the Thanksgiving holiday I was informed by the school that I had been identified as a "close contact"[1] since I had visited with my friend who had tested positive for Covid-19 in the past day. Therefore, I needed to do a 10-day self-quarantine immediately for the safety of myself and others. What follows is the story of my 10-day self-quarantine in an MIT graduate student dorm.

At that moment, I felt shocked and stressed. My Thanksgiving holidays were instantly canceled

Notes

1. According to the Centers for Disease Control and Prevention (CDC), the definition of "close contact" for Covid-19 is as follows: *"someone who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection) until the time the patient is isolated."*

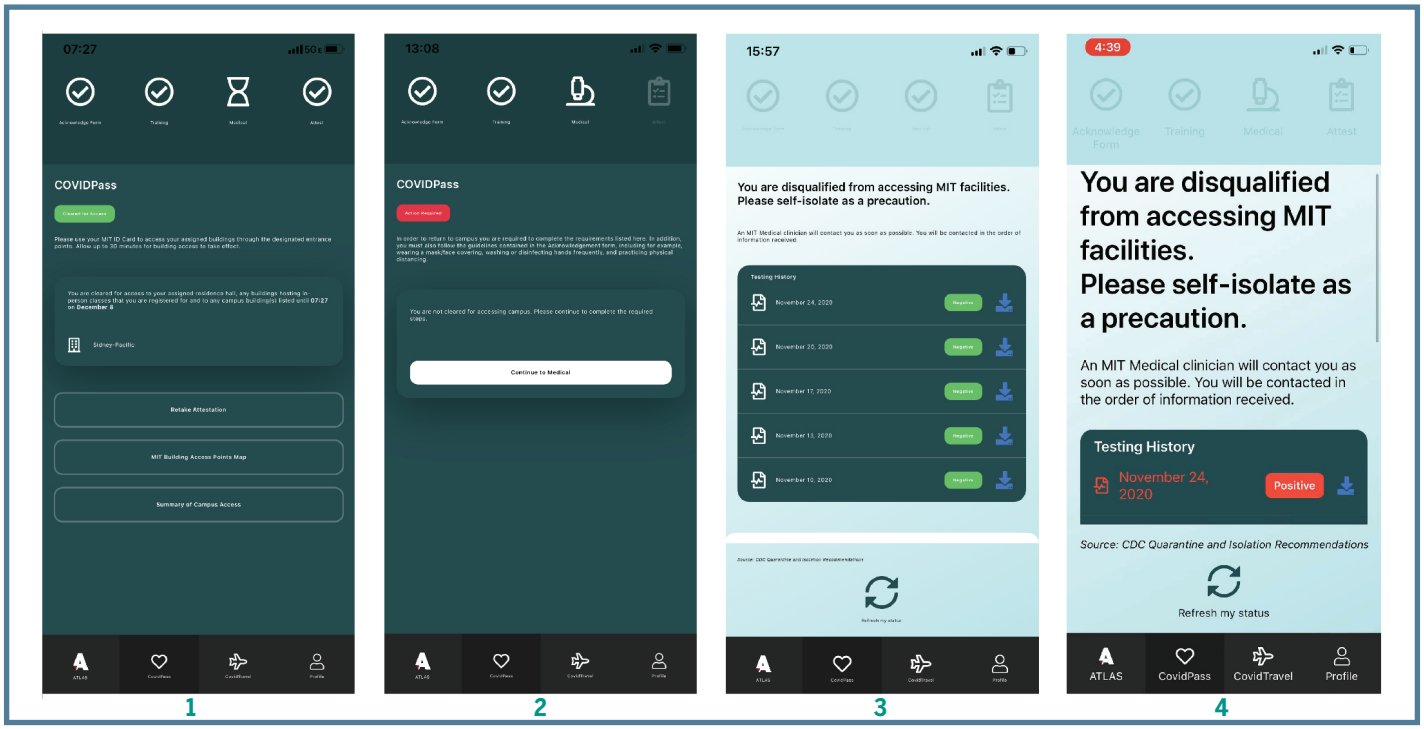

FIGURE 1
MIT COVID Pass interface: 1) Negative Covid test result, 2) Prompt to get Covid test, 3) Status as "close contact," and 4) Positive Covid test result.

and, in the worst case scenario, I was also afraid I might test positive for Covid-19. It took me some time to calm down and think about how to cope with the situation. One constructive possibility was that as a designer, I could authentically capture my personal self-quarantine experience to identify user pain points, and improve the school's quarantine procedures to help more people in the future. In this article, I briefly discuss my learnings from the quarantine experience as viewed from four angles: Meals, Time, Movement, and Data Ethics.

INSIGHT 1: MEALS

MAKE THE DINING EXPERIENCE DURING QUARANTINE A REMEDY FOR THE MIND

During my self-quarantine in the dorm, the school provided three meals each day on weekdays delivered to my door. On the weekends, brunch and dinner were provided. I appreciated that the school provided a Care Meal Order online form with three simple options: meat, pure/vegan, and oasis/allergen-friendly, which were all designed with balanced nutrition.

People might think that providing three meal options was such a tiny touchpoint and probably not worth mentioning. But it did make me feel warm and cared for during the quarantine. Food doesn't only fulfill a person's daily nutritional needs, but it also heals minds, especially if we curate the dining experience properly. During my quarantine, from the food service provider's perspective, I am asking myself one question: *How might we design a stress-relieving dining experience so that those under quarantine feel cared for through healthy and delightful food and service?*

INSIGHT 2: TIME

MAKE TIME TANGIBLE DURING THE QUARANTINE THROUGH ITEMS, SPACE, AND SERVICES

The uncertainty of waiting for my Covid test results and the associated mental stress made it difficult for me to focus on my work. I had one window wall to look at the scene outside my dorm, so I knew the difference between day and night as I watched the sun rise and set. But I still lacked a sense of time and connection to the outside world.

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FIGURE 2
All the meal boxes and paper bags I collected during the quarantine.

In movies, a protagonist trapped on a mountain or island may draw a rough calendar or boxes and cross off each day so they can *feel* the time passing.

My approach instead was to keep all the meal boxes and accompanying paper bags with my nametag to keep track of the waste I produced, the food I ate, and the bottles I drank—all of which helped me feel time was *tangible* and the clock was *ticking* (Figure 2). When I took photos of all the items I kept, it inspired me to think that for people in quarantine, the notion of time had been changed, not because people could not read the clock, but because their senses might be *blunted* or disappear without realizing it. Therefore, in the lens of a medical service provider: *How might we reshape people's perception of quarantine time so that they feel a sense of progress and positivity by providing items in limited space and human-centered service?*

INSIGHT 3: MOVEMENT

MAKE INDOOR BEHAVIOR DURING THE QUARANTINE MEANINGFUL TO REFLECT PEOPLE'S NEEDS

Since I had an indoor tracking device in my dorm for my master thesis project, I decided to repurpose the device and apply it to track my ten days' indoor trajectory (Figures 3 and 4) to see my quarantine pattern in terms of the amount of time and frequency I spent in different zones including the entrance, kitchen, rest zone, restroom, flexible zone (area for exercise), and working zone. The heatmap (Figure 5) was generated from my in-home trajectories and shows how much time and the frequency I spent within different zones, which revealed the hotspots in my dorm room. It is an informative way to visualize data.

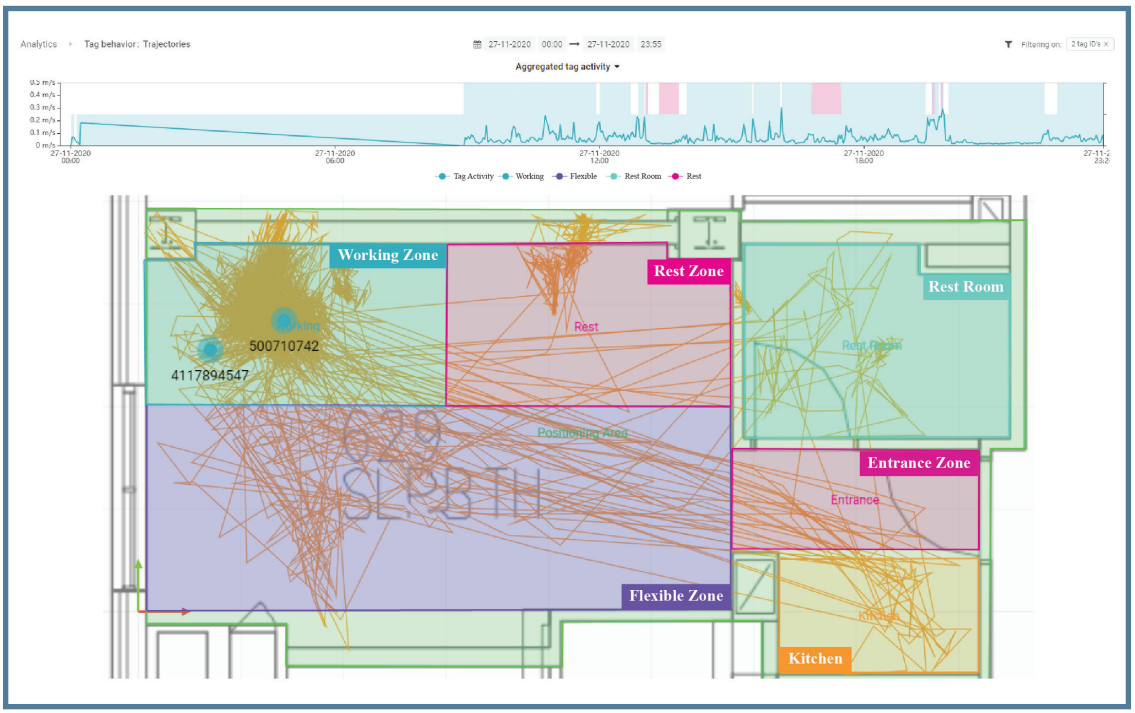

FIGURE 3
Space (MIT graduate student dorm) layout for quarantine and indoor trajectory software interface.

Interestingly, according to the data, I spent the majority of time for the first five days in the working zone (Figure 6). My initial thought was to keep myself as busy as possible to forget my situation. As the days passed, I spent more time in the rest zone and kitchen. In revisiting the data, I found that the longer I stayed in the dorm, the more time I spent wandering around between the kitchen and bed (rest zone), or just walking around (flexible zone) in order to release stress. I realized that keeping myself busy with work was not that helpful or healthy. Assigning a decent amount of time for exercise and relaxation was much more effective. We all need some mental space and time to release pressure. Through my indoor trajectory data and experiment, in the future: *How might we analyze people's indoor behavior movement data to help medical service providers predict people's mental health condition and needs during the difficult period of quarantine?* If the data can predict someone's mental health/affective state, then we can perhaps give that individual a nudge and consider another question: *What kind of nudge interventions can help people feel more positive?*

INSIGHT 4: DATA ETHICS

CAPTURE DATA DURING THE QUARANTINE IN A RESPECTFUL, RESPONSIBLE, AND HONEST WAY

Since the pandemic began, MIT has changed the way it operates from normal times. For example, because of the twice weekly Covid test requirement for those who have access to campus and facilities, the personal medical conditions for most faculty, students, and communities have been captured by MIT Medical (Figure 1, pp ##). Even though the school and medical department claim to protect everyone's medical privacy, we still need to be mindful of our data and how the school or company uses it. *Given the highly sensitive data that is collected about a user's personal health and indoor activity, how can we ensure that present and future operators of such tracking solutions maintain a high degree of ethics in the management of the acquired data?*

The Little Book of Design Research Ethics by IDEO is a great source that briefly discusses how to seek and share learnings, insights, and observations about people's lives in an ethical way.

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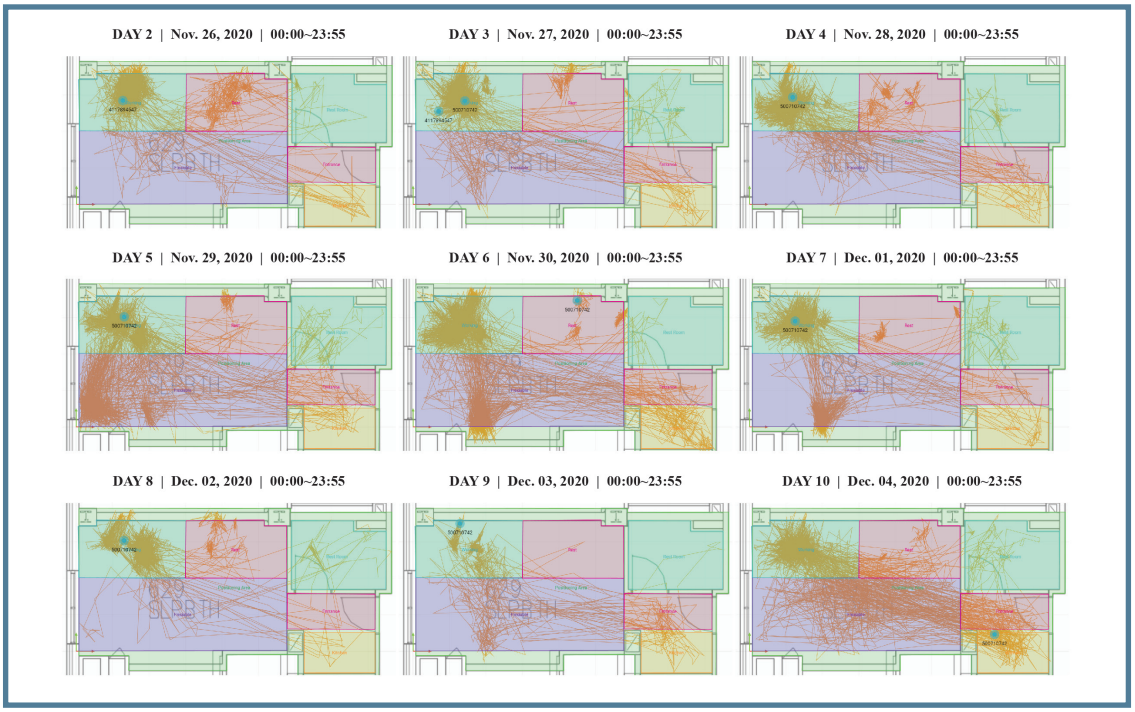

FIGURE 4
Daily (0:00~23:55) indoor trajectory screenshots from Day 2 through Day 10 of the quarantine.

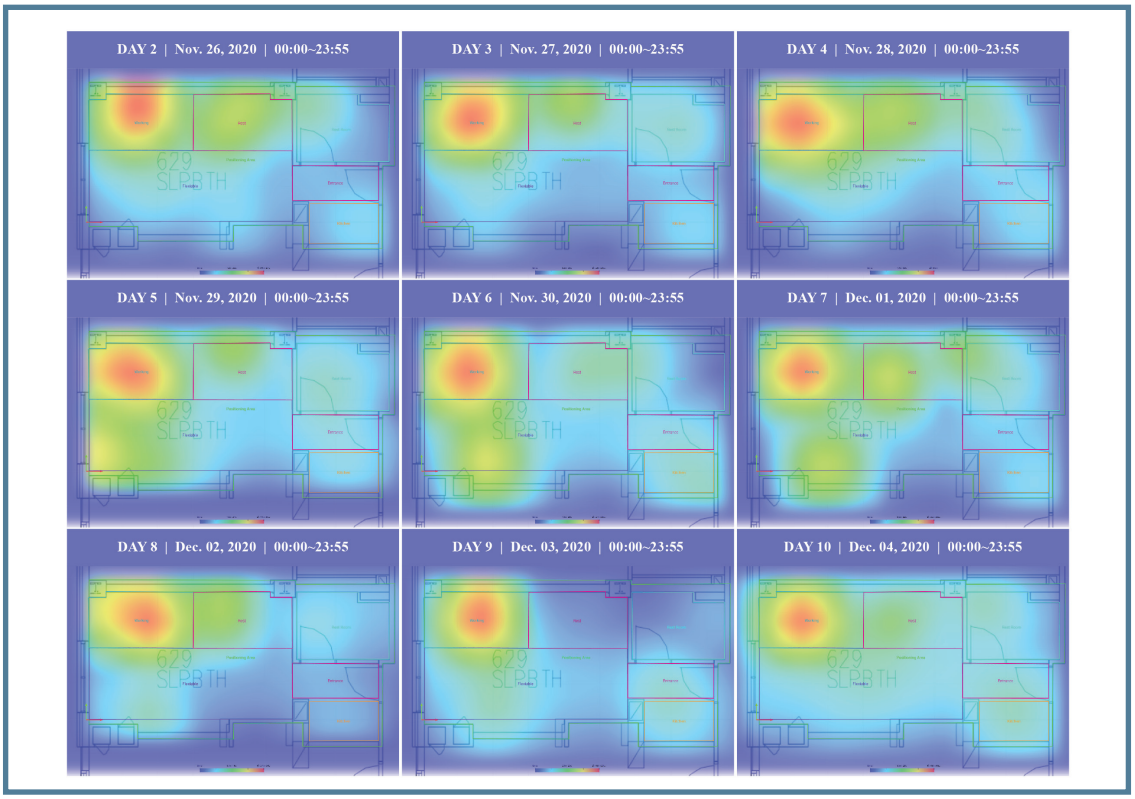

FIGURE 5
Daily (0:00~23:55) heat map screenshots from Day 2 through Day 10 of the quarantine (hotspot is near work zone).

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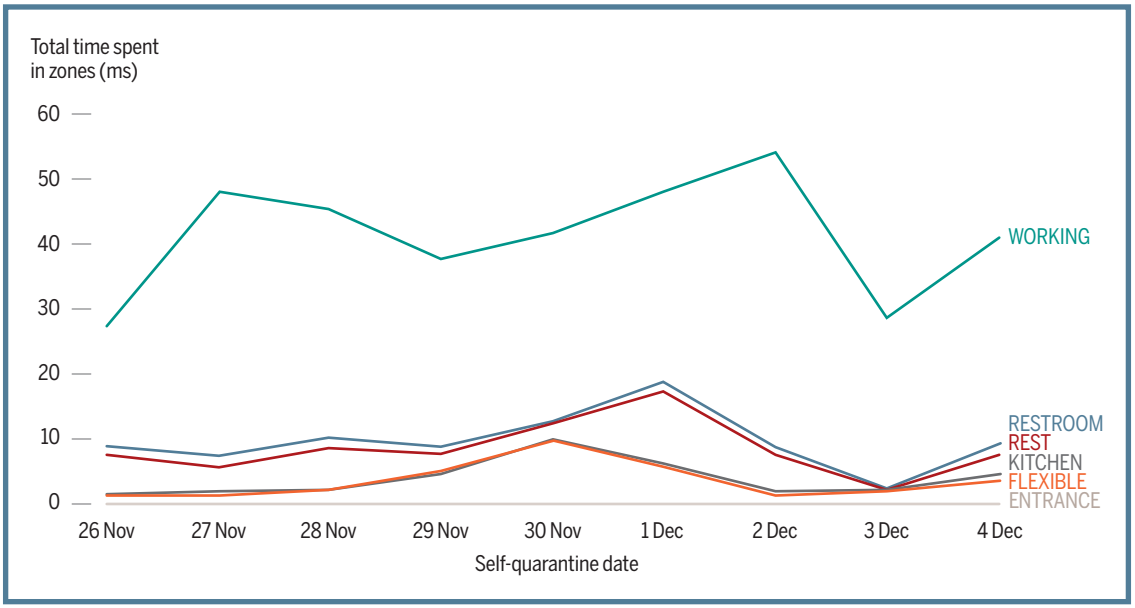
FIGURE 6
Comparison of the total time spent in different zones during the 10-day self-quarantine.



It is important to get the right data from people for the purpose of protection and safety. But we need to ask ourselves carefully how to retrieve people's data through a respectful, responsible, and honest approach. There is always concern for the data ethics that touch upon people's privacy and dignity.

Summary: Make services during the quarantine inclusive and empathetic

This article about my 10-day self-quarantine briefly describes the experience from four perspectives: **meals, time, movement,** and **data ethics** to reflect on how we can design and plan better human-centered quarantine services in the near future. I asked myself one How Might We (HMW) question from each angle in order to trigger and inspire the school, quarantine service provider, medical group, and food service provider to think comprehensively and inclusively for people in quarantine and act more empathically toward them.

After ten days of quarantine I showed no symptoms, my Covid test came back negative, and I returned to my normal, but limited, pandemic life. Faced with this stressful and uncertain time, thinking and acting as a designer helped me get through the quarantine experience and game me time to reflect on the role and responsibilities of being a designer. I hope these HMW questions can inspire others during the pandemic and beyond to make others' quarantine experiences better and human-centered. ■