

Report for 2022 Biomedical Innovation and Entrepreneurship Training Course for SPARK Asia and Oceania

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4th- 15th Jul, 2022, 10 am- 17 am in Japan-time

Online via Zoom and Microsoft Teams

Lecture

We had many professors and lectures for founding own company or building start-up project. These lectures are held in 10 am-5 pm every weekdays. What we have learnt have a long range from how to design novel ideas to how to solve and think of patent problems or presentation skill, all of which are essential for founding a company or start-up and be an entrepreneur. Needless to say, all lectures are given in English, after these lecture we have a time to ask some question about contents in these lecture to a mentor. Some conversations between us and mentos give us some chances to understand deeper and broaden our horizons even more. The mentor always have done ice-breaking, small talk, on beginning of the lectures that make us relief and passionate toward every lecture.

Workshop

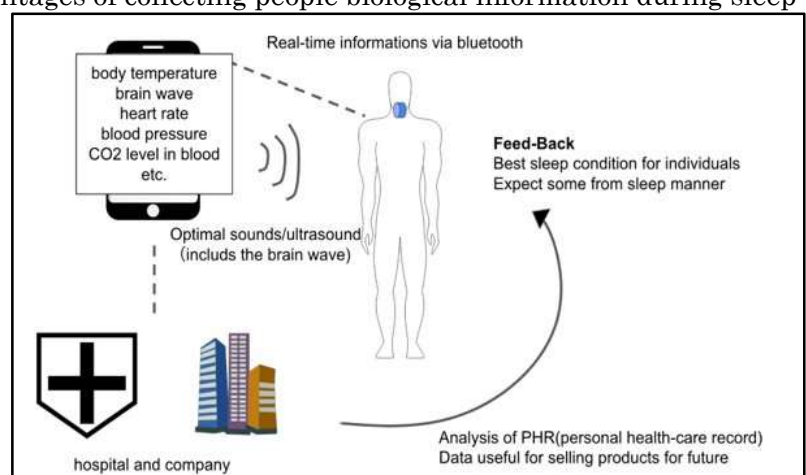
In workshop, we are divided into several group composed of 4 people. That group is a consistent team throughout the project. We four of us consist of two Japanese and two Taiwanese. Obviously, we needed to go through talking to them about everything in English so I was sometimes struggling with informing my opinions and conveying my intentions. The workshop times are always after lectures with no time-limitations. If we have had time, we would talk until we reach some satisfactory conclusions.



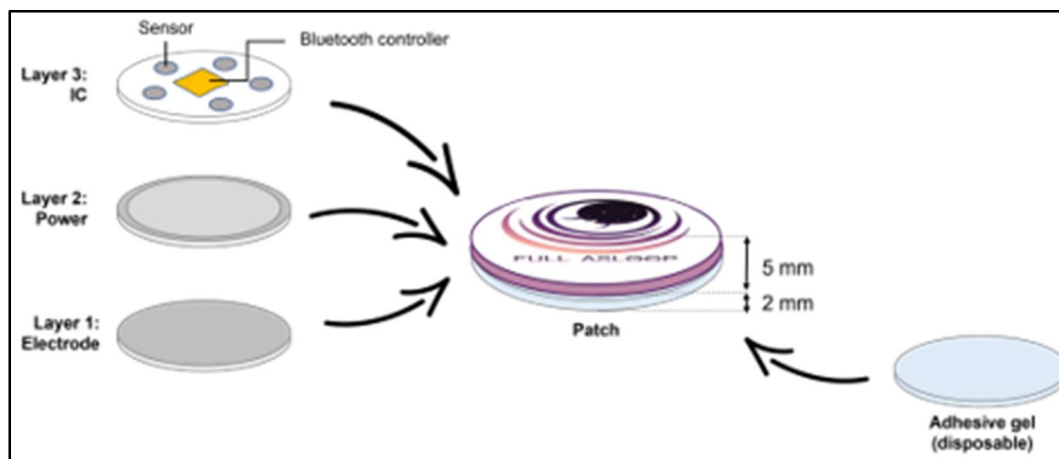
Our purpose was to develop the sleeping device that can help best sleep condition with using a certain sounds or pulse. Main reasons why we selected this topic is that when we get older, we tend to sleep less effectively and although sleep has a lot of relationship with any disease according to some researches. These things considered, it can also have some advantages of collecting people biological information during sleep which can be utilized for analysis of future diseases predictions and adopted into personal and individual treatment for any disfunction and disorders as a blueprint of this product in the future. It is conjugated for not only who has some SLEEP disorder but the

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people who is healthy currently. Because the pros are analyzing illnesses or potential ailments in advance so that it can be helpful for all people, which means all people are the target for our device. The basic functions are detecting body information (body temperature, heart rate, blood pressure, O2 volume in blood



and brain wave) and transmission these information real-time to mobile phone in order to creating specific sounds for controlling sleep cycle (REM/NREM sleep) for optimized sleep. And collected data of

people would be aggregated and conjugated for analysis of relationships between sleep manners and any diseases with using machine learning. The result of analysis would be a great method for personal prevention not only treatment. The device is actually a patch put around neck during sleep. The structure is shown in the figure on the right. The device includes detecting chips and Bluetooth device for

transmission to mobile phone. Electrode is necessary for detecting brain wave. For a good useability, disposable adhesive gel are separated from detection chips. People need to buy only disposable gel for continued uses. And it has to load some

Accuracy Test	<ul style="list-style-type: none"> • Measure accuracy of our product by comparing with other existing products with 10 people • Calculate accurate percentage of detections of body temprature, blood pressure and brain wave etc.
Effectiveness test	<ul style="list-style-type: none"> • Prepare three groups (10 people each) for checking out effects of "patches-itself, "optimal sounds" • Avoid and investigate placebo/nocebo effects
Skin sensitivity test	<ul style="list-style-type: none"> • Check out it isn't itchy and causing rashes on the skin
Application /Transmission test	<ul style="list-style-type: none"> • Monitor real-time data transmission to a mobile phone or a device via bluetooth

battery and hole for charge electricity for detection chip and a Bluetooth device. However, what we imagine in the future as our strategy is converting our body temperature into electricity for charging them. Some problems are still left unclear and has to be solved, for instance "How is detector degradation addressed?" asked by a participant.

When we have some problems or questions, we can ask Michel and Isabella, who are mentors through this program. We can always get accurate advices from them and we could make the most of them for our strategy. After we have done with thinking of design and strategy, it is a mandatory to think of how we go through clinical and accuracy test in detail like how many people we need when we conduct them or set the criteria of success/failure to determine the border between go or no-go zone. After setting the hypothesis of some tests, we proceed or go back to previous step to re-think about design and strategy again with the result from these processes.

Presentation

In this project, we have presentation two times. The first one is 5 min pitch explaining about our project briefly. The second one is 20 min pitch that requires all descriptions about our advantages and strategy till being product. After all pitches, we got some advices and awards for two groups. We heard all group's presentations. I was amazed at all presentations in which they described various strategies for reaching out the target customers or consumers. All things happening through this project are new to me and going to be core of who I am definitely.