



RESEARCH PROJECT

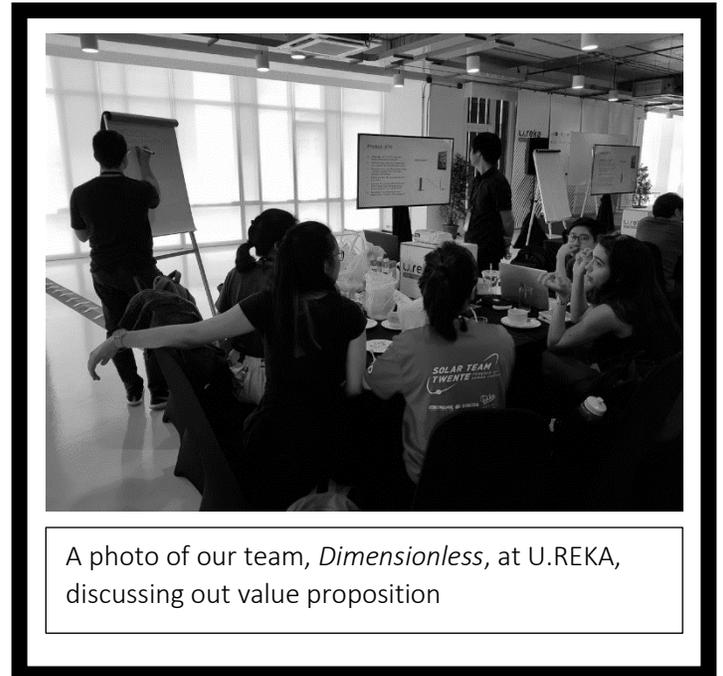
This summer I participated in the University of Toronto's Engineering Science Research Opportunity Program (ESROP). In collaboration with a fellow EngSci (Katherine) and an incoming U of T graduate student/KMUTT alumna (Smile), I worked under the guidance of Professor Jonathan H. Chan at KMUTT's D-Lab, exploring emotion recognition and the application of machine learning in affective computing. Initially, our project set out to establish a new multimodal emotion recognition framework. While this task appeared simple at first, it would soon pose to be more complicated than we had originally anticipated. Affective science (the scientific study of emotion) research is highly interdisciplinary, combining aspects of psychology, neuroscience, anthropology, linguistics, and computer science (and that's just to name a few). In addition, the question of whether emotional states can be empirically measured is a hotly debated topic within the affective science community. As such, we decided to write a literature review, assessing over 70 papers. We examined seven modalities of emotional expression individually (as well as a few multi-modal studies), reviewing findings from both existing meta-analyses, as well as independent studies. We attempted to determine whether there is cross-study evidence of universal 'emotional expression' for different modalities. We submitted our paper to CASCON, a conference hosted by IBM in October, and are currently waiting to hear back from them.

In the mean time, I have also been doing some preliminary experiments using the EMOTIV Insight EEG Headset. To assist Smile with her upcoming research project at U of T, I decided to draft up a document describing different *emotion-measurement* devices. As such, I thought it may be useful to test out one of the devices (available at D-Lab) myself. The EMOTIV headset is unique in that it translates the raw EEG signal (which is hidden from the user) into "6 cognitive metrics": interest, excitement, relaxation, engagement, stress, focus. Users can download an app which allows them to see real-time data captured by the headset. Moving forward, I'd like to learn more about the device's, as well as the apps software. I'm curious to know how and why these specific "cognitive metrics" were selected. Furthermore, I'd be interested to see which models and algorithms are used for their signal processing, as the choice of machine learning method has a significant effect on the results of EEG analysis.

Participating in this project has allowed me to continue to develop my interest in the interaction between psychology, human behaviour, and technology. Applying the knowledge I've gained over the past three months, I hope to pursue projects in the same vein in the future.

U.REKA

In June, I joined the *Dimensionless* team at the 3-day **U.REKA** ideation boot-camp. **U.REKA** is “a university-industry collaboration to catalyze, curate, and incubate frontier tech innovation towards commercialize-able products and/or spin-offs to create an innovation ecosystem for deep technology in Thailand”. Over the three days we worked as a team to develop our value proposition; after several workshops and group discussions, the conference culminated with each team giving a formal pitch to a panel of judges. While our team was not selected to move through to the next phase of the program, **U.REKA** still served a valuable learning experience. We had the opportunity to hear from several industry experts, who not only shared their personal experiences, but also offered advice for how to launch our own start-up.



EXPLORING BANGKOK

On the weekends we sometimes went downtown and visited different areas of Bangkok. From enormous shopping malls to exquisite temples the city has so much to offer. Though I would not consider myself to be a big shopper, I really enjoyed browsing the stalls of night markets; they also provided me the opportunity to practice my bartering skills. My final weekend in Bangkok we visited the Queen Sirikit Gallery. They had an exhibition on which featured the works of young, local Thai artists. I was very impressed by the exhibit; it showcased a wide variety of works and offered a unique ‘youth-centric’ perspective on modern Thai culture. Following our visit to the museum we had dinner and what may be my favourite restaurant in Thailand: Mango. We had a delicious vegetarian/vegan feast – and I can’t wait to go back so I can try all the dishes on their menu 😊.



TRAVEL

In addition to exploring Bangkok, I was fortunate enough to do additional travelling, both within and outside of Thailand. Over the last weekend in June I met up with a group of Engineering Science students (who were interning in Singapore) in Krabi. We toured the Hong Islands via longtail boat, went rock climbing, explored Ao Nang, and made some new friends from the Netherlands. The beaches were spectacular, and I hope to visit the South of Thailand again in the future. The next month, I spent a little less than a week in Singapore, where I was finally able to meet (in-person) one of my mum's close friends. It was lovely getting to spend time with her; she was a fantastic host and taught me a lot about past, and present-day Singapore. I also ventured to Malaysia with the EngSci interns for a day. Despite waiting at passport control for over 3 hours, we had a lot of fun joking around, talking about our summer experiences, and singing songs to keep ourselves distracted. Above all, my favourite aspect of Singapore was (oddly) their public transit system. When I returned to KMUTT I could not stop raving about the Singaporean MRT. The trip re-ignited my nerdy obsession with well designed transit systems. Finally, I took a solo-weekend trip to Chiang Rai. I'll admit, I was a bit nervous about going to Chiang Rai all by myself. Nonetheless, it was one of the highlights of my summer. The mountains, temples, and waterfalls, I was lucky enough to see, were beautiful! The locals, and tourists I met were kind, generous and helpful. And I left Chiang Rai refreshed, and with a renewed feeling of self-confidence. Thailand is a place unlike anywhere I've been before. From the food, to the diverse geography, to the people, coming here has opened my eyes to a culture that is delightfully different from my own.