HCI Practice at MIMOS Berhad: A Symbiotic Collaboration between Academia and Industry

Abstract
In this paper, we share and reflect the current HCI practices between MIMOS Berhad and the academia, as an example of how industries such as MIMOS Berhad, can create, sustain and prolong the symbiotic collaboration between the two. We categorise the cooperation into two types: loosely and tightly couple cooperation.

Author Keywords
HCI practice; academia; industry;

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
HCI activities in Malaysia are becoming active from year to year. More prominent efforts can be seen from the universities. From the list of papers published by the local HCI researchers throughout Malaysia, the work carried out address almost every knowledge area (KA) of HCI, as per described in the Computer Science Curricular 2013 [8]. For instance, we have a number of researchers doing augmented and virtual reality, mobile interaction, social computing, interaction design,
user experience, learning environment, human factors and programming, gaming, visualization, usability and evaluation and sustainability. Some high impact projects include improving cardiothoracic practice using UCD (about USD35,000)\(^1\) and hand code al-Quran typography where a centre known as Yayasan Fakih was established to support disabled children to learn al-Quran [6].

Similarly, there are many practitioners in the industry who are working on the user experience and usability testing. UX Malaysia, a group to gather Malaysia UX Practitioner plays an active role in promoting awareness by conducting talks and courses for industries practitioners. Malaysia Software Testing Board (MSTB) offers testing on software usability. While both MIMOS Berhad and Netizen Testing companies offer services to run usability testing, predominantly for website usability and user experience.

Having said this, more efforts can be performed to strengthen the symbiotic collaboration between the academic and the industry in ensuring the success of HCI in Malaysia [4]. In this paper, we will specifically describe in brief and reflect the efforts that are already in practice at a Government Agency MIMOS Berhad and outline the recommendations for the betterment of narrowing the gap between the academic and the industry.

**HCI in Education:**

At the university level, previously, HCI was taught under courses such as User Interface Design, Interaction Design, Graphical User Interface and Website Usability [1]. Over time, the importance of HCI in computer science has been acknowledged at the national level, and becomes a core subject for the undergraduate degree, as aspired and in lines with the body of standards such the ACM and IEEE. Students are taught to become appreciative with the users’ involvement in the development process in order to produce software of good quality [2, 3, 4]. HCI has also started to gain popularity at the postgraduate level Two universities – Universiti Teknologi MARA and International Islamic University Malaysia, offer advanced HCI as one of the courses in their Masters degree, one offers a Masters program specifically in Human Factor, and one offers a PhD program specialized in HCI and CSCW/L.

The undergraduate students are introduced to the three fundamental elements: human, computer and interaction, and are made known to the design process. Projects, assignments and hands-on class activities are part of the syllabus to allow the students to apply and materialize what they learned during the lecture.

Collaborative work between the academic and the industry do exist. To provide better insights on the concepts being taught in the classroom, speakers from the industry were being invited to fill up one slot of lecture. Some universities go even further by organizing one day dedicated for HCI program, where they invite industrial panel to give talks and evaluating students’ projects. This collaboration is two ways too. Internships do take place at companies mentioned above where they specifically emphasized on applying HCI at workplace. Following the description by Olson and Teasley [5], we term these efforts as loosely coupled cooperation. While tightly coupled cooperation refers to our effort in establishing

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\(^1\) This is a three-year Fundamental Research Grant Scheme awarded by the Ministry of Education of Malaysia.
joint research between academia and industrial, in which with this kind of cooperation, the work has high dependency on each other.

**HCI at MIMOS Berhad**

MIMOS Berhad is a government agency in Malaysia. At MIMOS, there are two departments responsible in practicing HCI. One belongs to Human Factor and HCI under Product Design where work focuses on idea creations, design process and prototyping. The second department concentrates on performing usability and UX evaluation and testing. There is a separation of the two as to uphold independent testing and, reporting to the development team, could be seen as a conflict of interest. If we relate to the HCI knowledge area (KA), the areas that MIMOS focus on are designing interaction, programming interactive systems, user-centred design and testing, new interactive technologies, statistical methods for HCI and design-oriented HCI.

Among the HCI researches that have been conducted at MIMOS by the first department were ethnography study in several police command centres in Malaysia urban areas and aquaculture site in rural areas. Activity Theories was applied in order to understand the artefacts and activities performed by users during emergency situations in the command centre. During the requirement gathering activities, situation awareness (SA) theoretical model has been applied to include the mental models and goal-directed behaviours of operators during emergency call. In the aquaculture site, unobtrusive observation was conducted to the shrimp activities in order to understand its behaviour. A decision support system based on water quality and climate change is proposed as a result from HCI user research and requirement analysis.

The latter department was formed to accommodate the necessity of usability testing or evaluation software developed at MIMOS. Since its inception, the group, now known as the User eXperience team has performed over 300 evaluations for internal and external clients. The methods being practiced are, User Evaluation Method (UET), where clients are brought into the lab, cognitive walkthrough, accessibility testing, kansei engineering I, survey, eye tracking, and Heuristic Evaluation (HE), which is performed by usability engineers. MIMOS also has their own set of usability principles which was tailored and customized from Nielsen usability heuristics to suit to their practice [7].

The symbiotic collaboration between academia and industry in HCI at MIMOS can be seen through many initiatives. Among the efforts that already taken place are as follows:

- Involve in strategic discussions
- Deliver talks / lectures
- Appointed as adjunct lecturer
- Judging / evaluating students projects
- Receive visits from students
- Promote the use of software tool via workshop
- Student internship
- University staff attachment
- Joint supervision for undergraduate and postgraduate work
Become a research partner with two local universities in grants by the Ministry of Education of Malaysia

The initiatives as mentioned above, should be applauded and replicated by many more industrial companies in Malaysia. Although mostly are all of the loosely coupled cooperation, they are important as they could give impetus to the tightly coupled cooperation. There are many benefits can be drawn from here:

1. Enable to highlight to students the actual scenario as it happens, for instance, when performing ethnography, gathering user requirements, doing participatory design study
2. Provide insights into the current market trend to students due to vast experience in evaluating many e-commerce systems and web portals. Students would be able to relate, the most common principles and issues related to these type of systems
3. Expose the students to the importance of statistical study in HCI when it comes to summarizing results and findings from experiment
4. Emphasise that everything are not just theories and concepts. Students can also do programming both front end and back end to develop an interactive systems
5. Apply tool, for instance, mi-UXLab to assist in performing UET and HE
6. Facilitate in deriving to joint research collaboration
7. Leverage and share laboratories and facilities between collaborators by their niches and expert areas, so as to build and design lab that is not redundant

Future Direction
Through symbiotic collaboration between academia and industry would definitely benefit both ends. As what we already experience, both actually feed one another on informing, updating, improving the practices of HCI besides enabling more collaboration research work between the two. What we hope to do next is to come up with a proper model so that it could be used as a base or guidelines to sustain the symbiotic relationship.

Acknowledgements
The first author would like to thank UTM and MIMOS for the industrial attachment programme.

References


