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HCI education and UX practice: Highlights from Singapore

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ABSTRACT

This position paper highlights trends in education, practice, and support of HCI/UX in Singapore, a small city-state island in Southeast Asia. The paper was prepared for the 2022 Southeast Asia Computer-Human Interaction (SEACHI'22) virtual workshop on Apr 14, 2022, as part of the ACM CHI Conference on Human Factors in Computing Systems (CHI'22) international conference.

CCS CONCEPTS

• **Human-centered computing** → Human computer interaction (HCI); HCI design and evaluation methods.

KEYWORDS

HCI, UX, Singapore, Southeast Asia

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1 INTRODUCTION

The historical origins of promoting and developing the Computer Software and Services industry in Singapore date back to the 1980s as part of the government's national-level economic restructuring program. A survey from this era described an ambitious projection of 'computer personnel' growth from 850 in 1980 to somewhere between 5,800 and 7,800 by 1990 [1].

Fast forward 30 years to 2020, the digital economy in Singapore was employing over 210,000 workers and has created more than 13,000 professional jobs, according to the government agency Enterprise Singapore [2]. The technological innovation domains in the country today have greatly expanded from the traditional computer software and telecom sectors in the early 80s. Key growth areas include digital government, cybersecurity, artificial intelligence, cloud computing, the internet of things, industrial automation, fintech, 5G, and other smart urban solutions in mobility, healthcare, energy, aviation, and defense.

UX practitioners and academic researchers in Singapore are well-positioned to participate in these digital transformation projects with their unique expertise in designing technologies that allow people to participate in the new digital economy in ever-so-innovative ways. Next, we will highlight a few points about HCI education in Singapore, especially where we see opportunities for further engagement for educators and practitioners alike. Note: We consider the terms human-computer interaction (HCI) and user experience (UX) interchangeable. To recognize that academic disciplines prefer the former and that industry practitioners prefer the latter, we use these two according to the topic of discussion.

1.1 HCI Education in Singapore

In the 2015 ASEAN CHI Symposium about HCI education across Asia-Pacific, Singapore was described as a place where HCI is offered at leading universities as a subject of study and an advanced research area [3]. Unfortunately, no systematic analysis has yet been conducted on the country's HCI education landscape. However, we know anecdotally that, similar to the global trends [4] [5], the formal teaching of HCI in Singapore originated from the human factors disciplinary outskirts of the computing systems.

Courses about interaction design, user interface (UI), user experience (UX), human factors, and prototyping are still offered today by the computer science departments of the six Singaporean Autonomous Universities: National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Management University (SMU), Singapore University of Technology and Design (SUTD), Singapore Institute of Technology (SIT), and Singapore University of Social Sciences (SUSS). For example, one of the most active HCI research centers in Asia, the NUS-HCI Lab [6], is housed within the computer science department at NUS.

A recent National Design Industry and Manpower Study [7] predicted that by 2025, Singapore would need about 85,000 designers, centered around the five fastest emerging roles of content strategists, experience designers, product managers, design researchers, and business strategists.

As institutes of higher learning rush to fill the talent gaps within the workforce of a growing design sector and an innovation-driven economy, it is evident that HCI education is integral to Singapore's 2050 vision of broader design education [8]. To meet the increasing demand for 'T-shaped' local experts, Singaporean institutes of higher learning introduce more interdisciplinary and transdisciplinary courses from fields such as communications, media, arts, games, data science, design, and business.

One example is the 2021 launch of a Data, Design, and Communication track for students majoring in Communications Management within the Lee Kong Chian School of Business at SMU [9]. Core modules for the track include user experience (UX) and product management, introduction to data science, machine learning foundations, design thinking, and storytelling. With an emphasis on human-centered design, turning data into impactful creative

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insights, and delivering powerful narratives, students prepare themselves for jobs in the digital economy while looking beyond traditional disciplinary boundaries.

Courses with similar curricula exist elsewhere as well, including at the NUS Faculty of Arts and Social Sciences' Department of Communications and New Media, NTU's School of Art, Design, and Media, and within a specialized degree program of SIT's Bachelor of Arts in User Experience and Game Design, for example. This phenomenon aligns with the global efforts to emphasize interdisciplinarity within HCI education [10] and pedagogical choices [11].

Another active area of the Singaporean HCI education landscape is the continuing education offerings by universities, polytechnics (post-secondary education institutions), and private learning providers. These programs are catered to life-long learners, mid-career job seekers, and people looking to develop their practical skills in the digital economy regardless of their background and industry. Many HCI programs and courses are available, ranging from workshops and bootcamps through a few months-long introductory courses and skills refreshers to multi-year specialist diplomas and professional certificates. Many of these programs are subsidized through the government's SkillsFuture scheme [12], which provides learning credits and industry collaboration opportunities to students, adult learners, employers, and training providers.

The following section provides a perspective on how UX, the amalgam of experience design, customer experience design, service design, design strategy, and design research, is practiced today in Singapore.

2 UX PRACTICE IN SINGAPORE

According to the UX maturity framework [13], Singapore's UX practice maturity falls between levels three (Emergent) and four (Structured). It is functional, partially systematic, and there is evidence of effectiveness; however, its applications and effectiveness are inconsistent.

2.1 Design as a function exists

In Singapore, organizations have invested in dedicated in-house design teams of UX professionals or outsourced to design consultancies. As a result, there is a hunger for UX talent, and these positions attract talent from different parts of the world, namely, the US, Australia, Europe, China, and South Korea.

2.2 There is a hunger for user insights and aesthetically pleasing UI designs

Organizations see user insights as a significant input to providing offerings to customers with unique value propositions and differentiating themselves from the competition. Being hyper-local is seen as the key. For example, Grab's success over Uber in the region is primarily attributed to this strategy [14].

Additionally, having local designers work on the user interface design is integral to product development. It is no longer appropriate for engineers or product managers to create user interfaces as their side job. UIs that follow design guidelines, branding and are aesthetically pleasing are essential elements of a go-to-market stage. However, in most cases, the UX practice is still limited, and the application of UX practice is inconsistent.

2.3 UX is seen as a downstream function

While there is a handful of organizations that practice the end-to-end UX life cycle (i.e., framing, in-depth user insights, ideation, prototyping, validation, and solutioning) in many organizations, the efforts are limited to designers creating UIs according to already set product specifications and researchers testing these final designs in usability testing. Design as a function works on the how and has very little influence on the what and the why.

2.4 UX is not seen as a decision-making function

In most organizations, design leadership is not officially recognized as a decision-making figure. Therefore, design must still negotiate and influence from the ground up with those who hold the key. Decision-making functions in tech tend to be engineers, product managers, and in the non-tech part of the business. Therefore, design is not an equal counterpart in Singapore compared to the West.

2.5 UX is mainly seen in digital

In Singapore, UX practice is mainly applied in the digital context. Organizations primarily see the need for design when developing apps or websites. There is confusion and tension when the designers and researchers try to work outside this context. A significant amount of stakeholder education and convincing need to occur before UX can play in the non-digital space. This mainly comes from a lack of awareness about the full potential of UX.

As mentioned above, UX is seen as a downstream function where designers create UIs and researchers run usability testing. The awareness that UX can influence business decisions through user insights and design strategy; UX could help see future potential through ideation and prototype validation. These can be applied to any aspect of the organization, which is currently a foreign concept.

2.6 UX roles are particular and specialized

UX talent in Singapore is highly specialized. Design researchers do just research, and designers just work on UI. Additionally, roles that are available for UX practitioners are limited to these. There is minimal opportunity for those who want to practice UX end-to-end. In many cases where it does happen, it is an underground effort. There is a limited practice of framing, strategy, ideation, conception, and experience prototyping. The researchers hand over the insights, and designers hand over the UIs. Concepts such as service design and design strategy are pariahs that find it hard to belong. Here we do not advocate for the jack of all trades, instead shedding light on the rigid walls and lack of opportunity for the field and its talent to grow into maturity.

3 WHERE TO GO FROM HERE

The UX practice in Singapore has a significant opportunity to grow. This is fueled by recognition by organizations and the government

with a promise of a broader potential of the field and appetite from the practitioners to become world-class leaders.

Already organizations see that designing unique products and services for the region is a game-changer for their growth. Organizations are starting to listen and recognize more aspects of the design practices, such as running design sprints to ideate and prototype, bringing in user insights into the decision-making process, recognizing design leadership as decision-makers, and design being part of the end-to-end experience where both online and offline experiences are seen as part of a single experience.

UX practitioners influence growth by taking opportunities to showcase the value of design and taking the initiative to go beyond their remit. Researchers make their insights actionable by co-running ideation sessions, prototyping, and experiments. Designers create concepts and influence product and business specifications. They not only design online but also offline experiences that improve the user experience and win the hearts of operations teams by streamlining backstage services.

Both governmental and non-governmental organizations exist in the country to support UX. For example, the skills framework by the Design Council Singapore [15] defines more comprehensive design roles such as empathic design, systems thinking, and business model innovation, just to name a few. In addition, the Design Business Chambers of Singapore [16] organizes design awards to recognize outstanding designers, design students, and design practices for their innovative design and human-centric approach. The awards aim to serve as a springboard for designers at all levels to take on increasingly complex problems in today's world, enabling designers to bring their ideas into reality.

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