Applied Sketching in HCI: Hands-on Course of Sketching Techniques

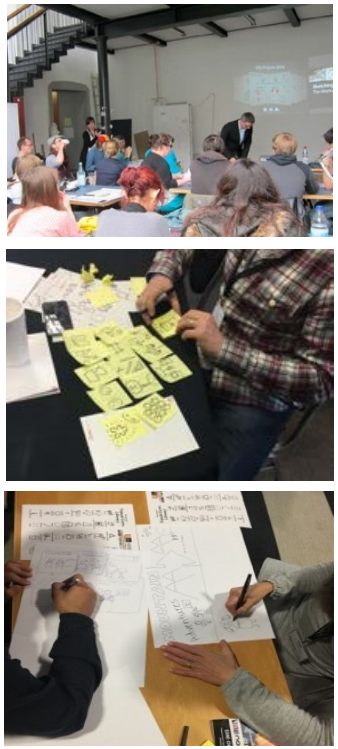

Figure 1: Sketching in HCI at *CHI '15* (top), *UX Leeds '16* (middle), and *NordiCHI '16* (bottom)

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Abstract
Hand-drawn sketches are an easy way for researchers to communicate and express ideas, as well as document, explore and describe concepts between researcher, user, or client. Sketches are fast, easy to create, and – by varying their fidelity – they can be used in all areas of HCI. The *Applied Sketching in HCI* course will explore and demonstrate themes around sketching in HCI with the aim of producing tangible outputs. Those attending will leave the course with the confidence to engage actively with sketching on a day-to-day basis. Participants will be encouraged to apply what they have learnt to their own research.

Author Keywords
Sketching, Drawing, Visual Thinking, HCI

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

Introduction
Sketching is in our roots: from ancient cave paintings to modern graffiti. We learn to use tools and make marks before we learn to speak, and our *visual* language is universal, and may be as fundamental to development as language learning [2]. Visualization is a human method of thinking, expression, and

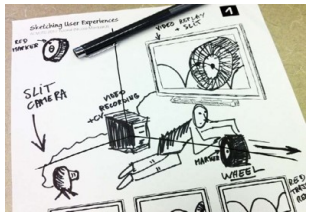
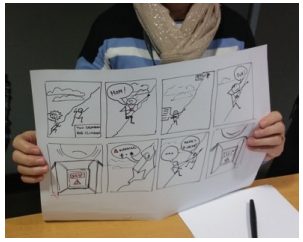
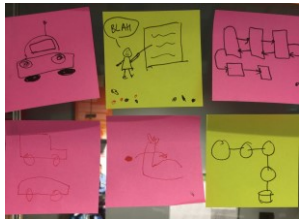


Figure 2: Participant's sketch of interactive system at *CHI '15*





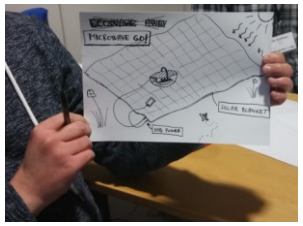


Figure 3: Participant's storyboard sketch (top), visual icon library (middle), participant's sketch of interactive system (bottom) at *NordiCHI '16*

communication – so how does it sit within the field of HCI? The traditional view of the "sketch" is that of a visual representation of an idea, a short, fast drawing on paper – although it has more meanings depending on context. It can be used across multiple disciplines and all levels of research. In HCI, the sketch can take on new roles as diverse as a section of code [1], or even a rapid prototype [3]. The pen and paper exemplar also has new life within the context of computation, in that sketches can be recognized using algorithms [5], converted into digital representations [6], and even used as input [7]. The popularity of sketching can be seen across disciplines and at all levels of research, so we intend not only to celebrate and promote this diverse role of sketching in the field of HCI to all practitioners, but also to generate discussion – encouraging researchers to adopt sketching within the framework of their own focus of research.

Detailed Course Structure

Duration of course: Three 80 minute sessions

Audience: The content of *Applied Sketching in HCI: Hands-on Course of Sketching Techniques course* is suitable for individuals from industry and academia that have an interest in learning and or improving their sketching skills. Novices, experts and those with an interest are welcome to attend.

Prerequisites: No prerequisites.

Course content: Participants will be guided through selected sketching techniques and strategies (Figs. 1, 4 & 5). These techniques will be based on well-established sketching, interaction design and computer science material, such as Greenberg et al. [4] but will also include additional techniques and examples. Participants will also be encouraged to bring an idea or research agenda which they feel would benefit from a sketching approach, in order to make a start on their own work and gain helpful feedback from the instructors and their peers. The *Applied Sketching in HCI* course will consist of 8 parts:

1. Sketching in HCI: Presentation and warm up discussion outlining visual thinking and sketching with examples from HCI, interaction design and computer science. *Hands-on activity #1*: Visual mind map exploring significance, benefits, and pitfalls of sketching in HCI + Show and Tell.

2. Visual language: Participants will sketch-along with the instructors, following a series of best practice examples, that will be live drawn and digitally projected for immediacy. *Hands-on activity #2*: The humble line, connectors and separators. *Hands-on activity #3*: Figures (people), actions, and place (Fig. 4).

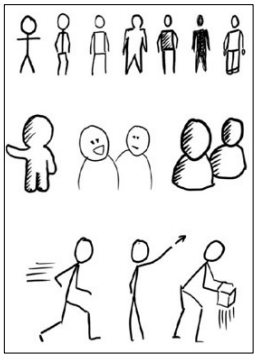


Figure 4: Sample sketching techniques covered in the course

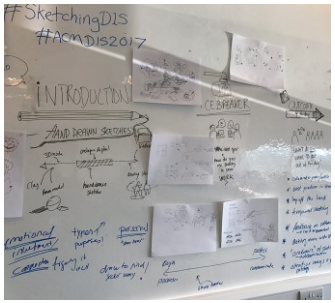


Figure 5: Live flipchart sketching of figures (top) and output wall (bottom) at *DIS '17* [8]

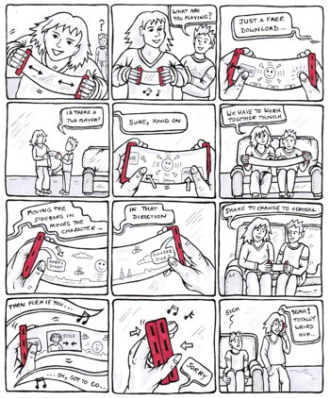


Figure 7: Scenario for extendable mobile device by Miriam Sturdee

3. Gestures, Devices and objects: Participants rapidly sketch common parts of sketches in HCI. *Hands-on activity #4*: Visual icon library (Figs. 1 & 3).

4. Typography and lettering: Participants will explore the role of annotations and notes in sketches (e.g. Figs. 5, 7). *Hands-on activity #5*: Hand lettering with different types of pens using worksheets + Show & Tell.

5. Photo tracing and hybrid sketches: Participants will create a collection of outlines as sketches.

Hands-on activity #6: Photo tracing with black markers and transparent film (Figs. 5 & 6) + Show & Tell.

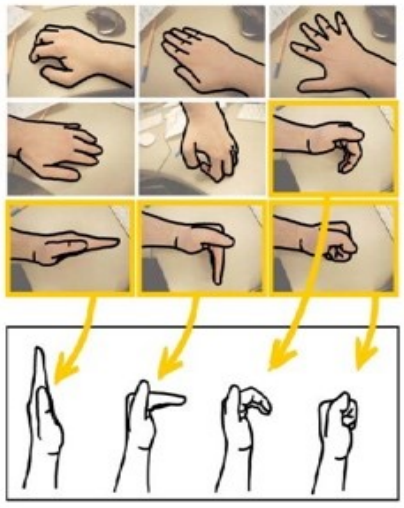


Figure 6: Photo tracing & hybrid sketches activity (*CHI '15*) [4]

6. Visual Storytelling: Participants will visualize the next stage of a theoretical prototype and its uses (peer generated), or storyboard a user experience using that prototype. *Hands-on activity #7*: Storyboard sketching (Fig. 7). *Hands-on activity #8*: image-interviewing.

7. Reproducibility: Examples of sketching in HCI, interaction design and computer science. *Hands-on activity #9*: Participants will work in groups to see if different types of sketches get different results.

8. Application of new skills to relevant research topics*:* Participants will utilize the skills from the initial stages of the course in the investigation of their own topic of interest. *Hands-on activity #10*: (low level) Mapping out early stage design iterations and ideas, or sketching problems/solutions. *Hands-on activity #11*: (high level) Refining and annotating images to explore potential benefits, pitfalls and implementation issues

The day-long course will culminate in group discussion around the skills learned, and give participants the opportunity to ask questions, exchange best practice, ideas, and make contacts for potential collaboration. Participants will also be invited to join an existing network of peers who are engaged with sketching research and practice in HCI.

Course Materials and Handouts: A visual summary 'sketchnotes' (e.g. Fig. 8) and crib sheet (e.g. Fig. 9) will be produced after the course and shared. A list of recommended materials, teaching resources – such as methods to apply sketching in HCI lectures and workshops – will also be shared with attendees.

Course History

An *Applied Sketching in HCI* course has not been previously given, however, similar courses and

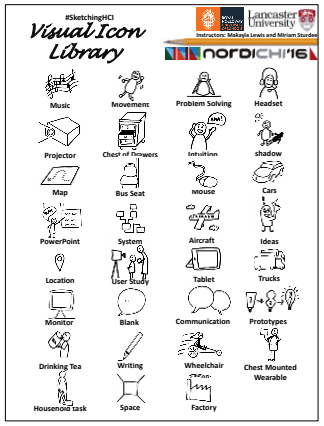


Figure 8: Sketching crib sheet from *NordiCHI '16*

Figure 9: Visual summary (Sketchnotes) from *CHI '16* by Makayla Lewis

workshops have been provided by the authors at: *CHI 2017, DIS 2017, NordiCHI 2016, TReSSPASS Summer School 2016,* and *CHI 2015*. Additionally, the authors have provided tuition on sketching in HCI, UX and computer science at industry events: *UX Oxford 2017, UX Scotland 2017, UX in the City: Oxford 2017, UX Leeds 2017, UX Bristol 2016, UCD 2015,* and *TCUK 2014*. The CHI 2018 course will have a greater focus on applying sketching on a day-to-day basis to researchers' own work and interests, an emphasis which has been lacking in previous courses.

Instructors Biography

Makayla Lewis is an HCI and Cyber Security researcher, she uses visual methods to explore human factors in private data management. Makayla is also an accomplished visual thinker and sketcher who organizes the monthly *SketchnoteHangout.com*, *SketchnoteLDN* amongst other sketching events and courses, and provides visuals and sketchnotes for international companies and conferences such as CHI and ISS, as well as the National Galleries in the UK.

Miriam Sturdee is a Research Associate at Lancaster University, where she is investigating sketching in the design of novel interfaces, data physicalization and public engagement. As a trained illustrator, she also regularly produces work for international clients, and is a member of *ReOPen*, the graphic novel and comics network at Lancaster.

Nicolai Marquardt is well known for his collaboration on *Sketching User Experiences: The Workbook*. He is currently Senior Lecturer in Physical Computing at University College London, and has coordinated several sketching courses at CHI.

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