IAT 884 TANGIBLE COMPUTING

Antle
Spring 2022

IAT 884 Tangible Computing

- Introductions
- Sneak Peak TECI Lab: Examples of Tangible Computing
- Course syllabus/schedule
- What course is about
- Assessment
- How course relates to Educational Goals for SIAT graduate program (i.e. what you will learn and why)
- Expectations
- Academic integrity

- Workshop #1

Introductions

- Alissa Antle (Instructor)
- You: Name, degree/year, thesis topic, supervisor, why IAT 884? What do you hope to learn?

Tangible Computing

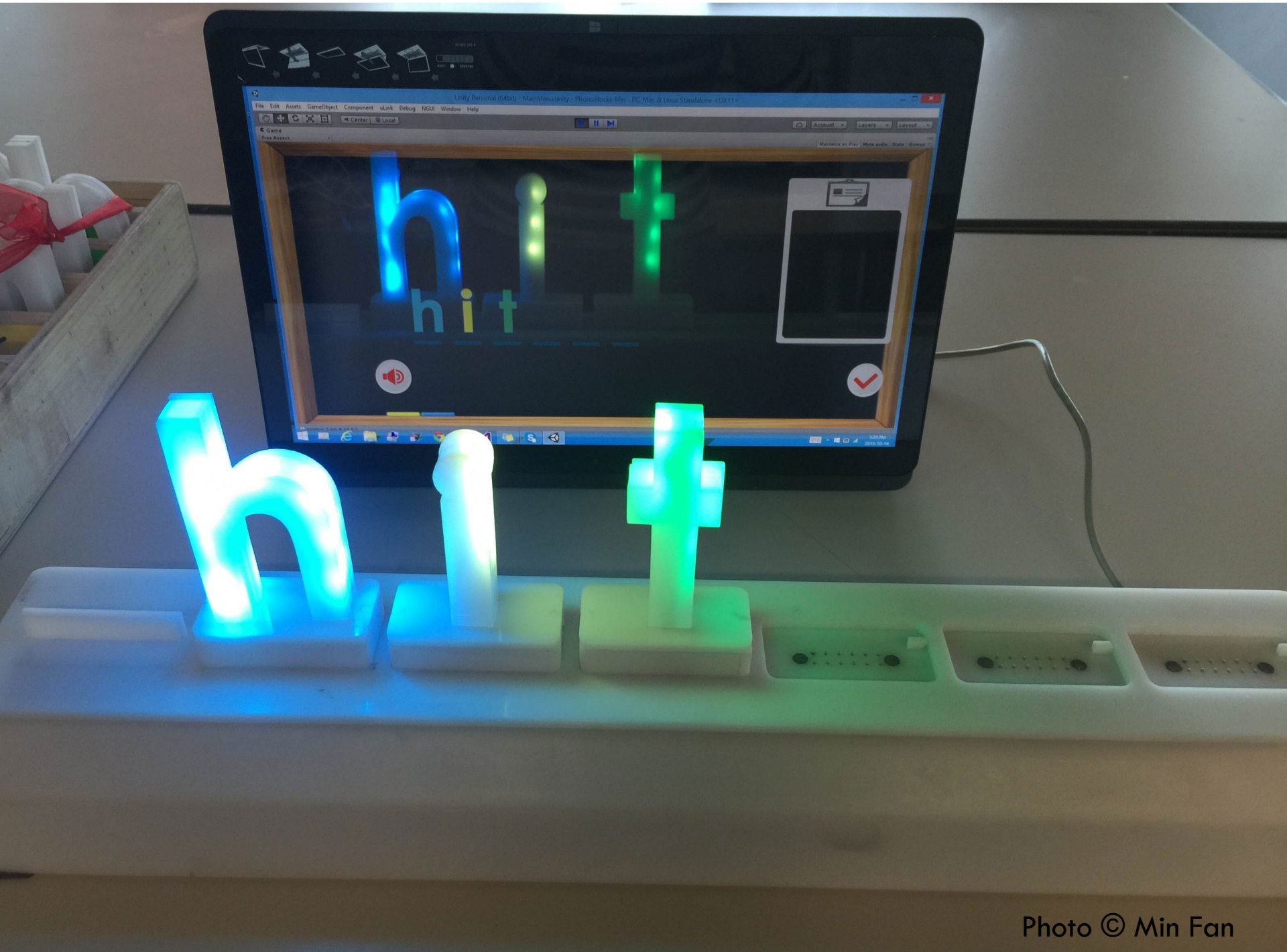
- Tangible, physical and embodied computing is about using physical objects to interact with digital computation …
- Hybrid/mixed physical-digital interfaces, representations and forms
- Utilizes a wide range of human abilities
- Tends to rely on embodied perspective on cognition
- Tend to be objects, surfaces, or environments out in the world

TECI LAB/SFU Centre for Early Learning
From the Archives #1

- How can tangibility support early readers with dyslexia?

PhonoBlocks: Tangible reading/spelling system (grades 1-3)

Runner up Best Paper CHI Denver, Co, 2018



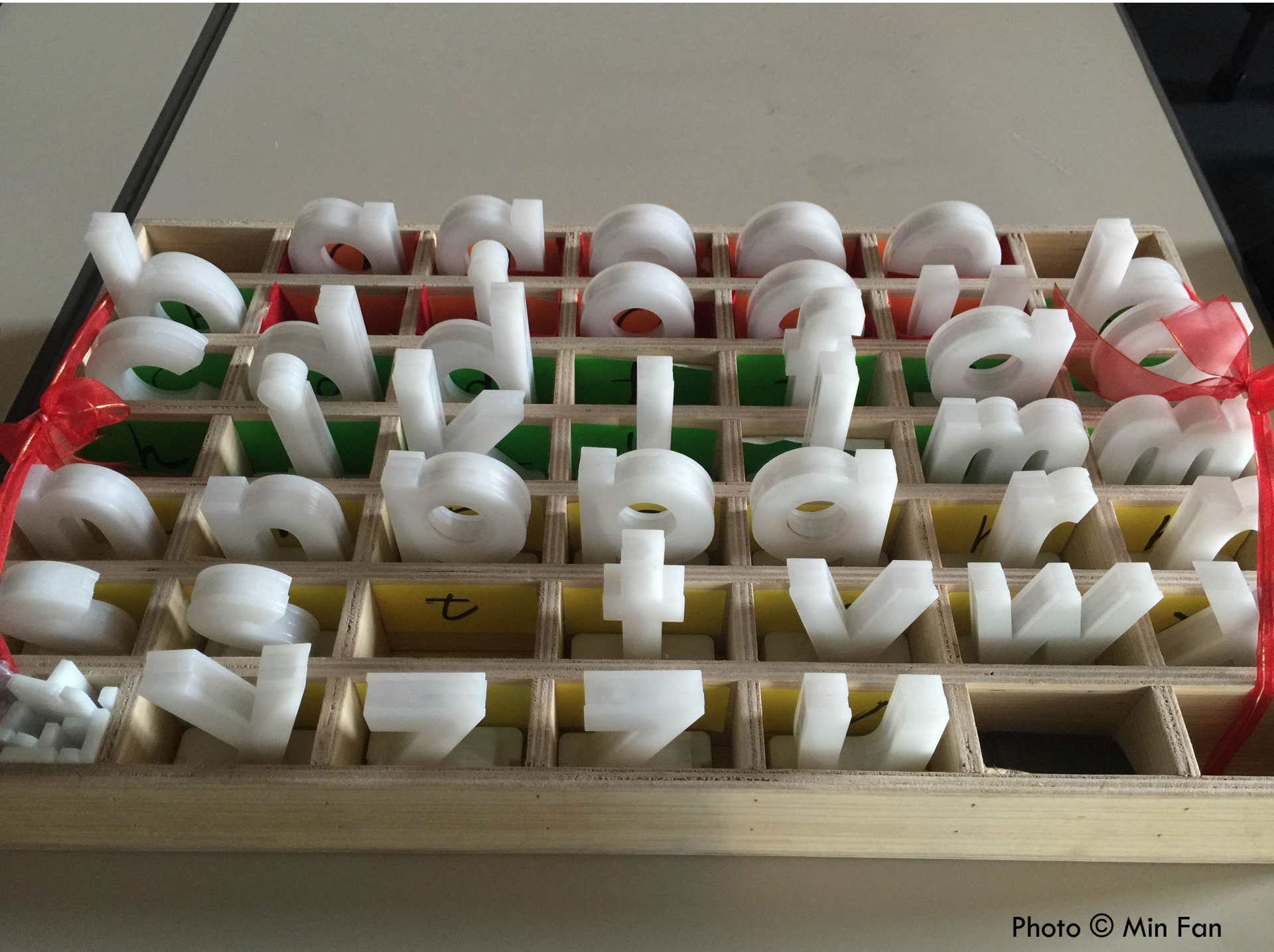


Photo © Min Fan

TECI LAB/Making Culture Lab
Archives #2

- How can we enable visitors to experience intangible cultural values through a tangible heritage exhibit?

ʔeləwɬkʷ – Belongings: Tangible interactions with intangible cultural heritage (all ages/public)

Ashgate Publishing Prize for Best Paper at EVA London 2015


Photo © Reese Muntean


Photo © Reese Muntean

Photo © Reese Muntean

TECI LAB/SFU Educ Tech/NYU Archives #3

- How can we support *positive interdependence and value-based reflection in collaborative learning about sustainable land use planning?*
- Youtopia land-use planning tangible tabletop *(grade 5)*
- Best Design CSCL 2015
- Check out the pig!

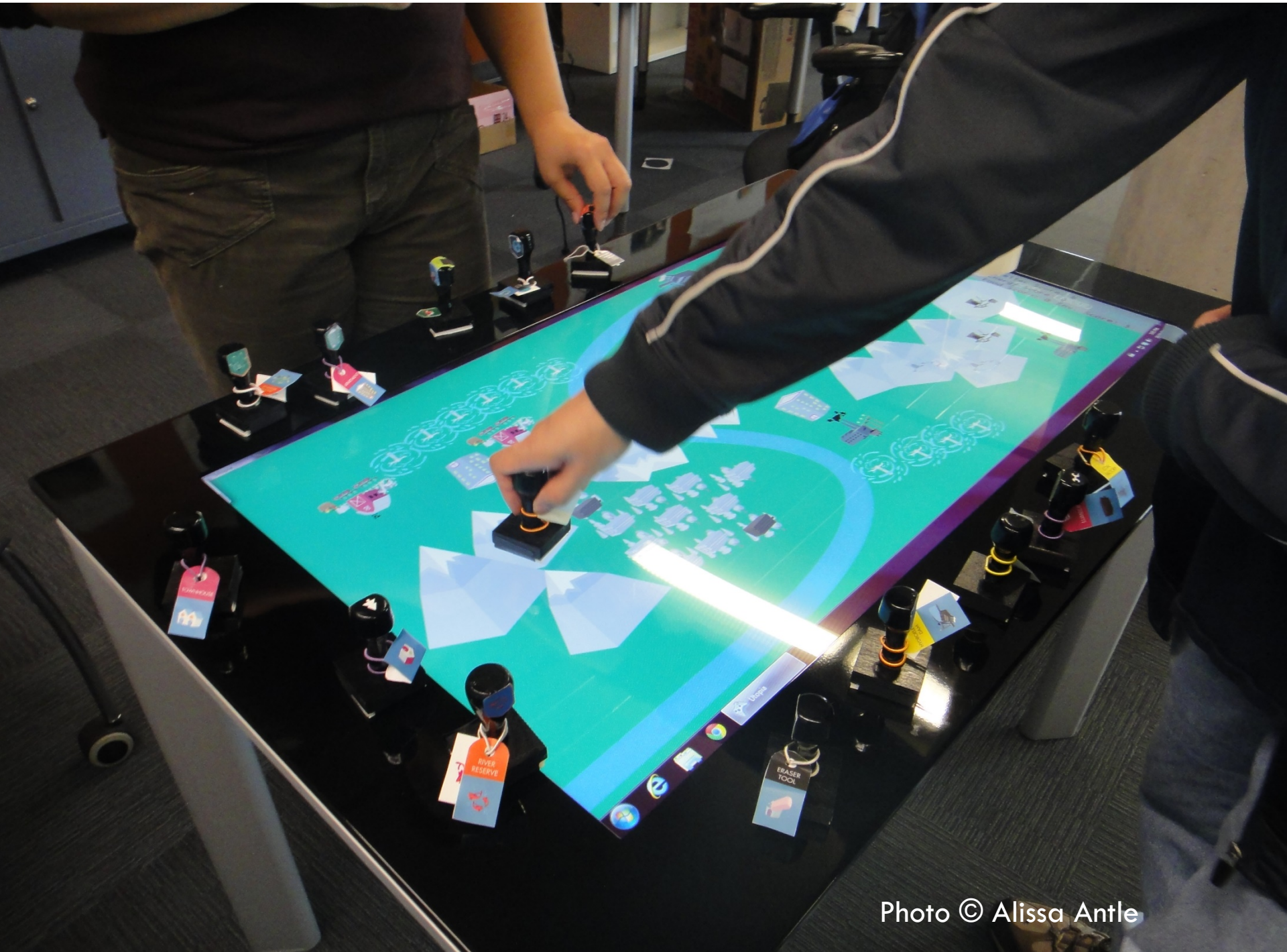


Photo © Alissa Antle


Photo © Anna Macaranas

TECI LAB Archives ...

Other crazy tangible systems

- Moso Tangibles: 2012 ACM notable paper award
- Springboard: embodied social justice (camera-based environment for something different!)


Photo © Saskia Bakker

Photo © Greg Corness

Come in all sorts of shapes and forms

- Each prototype addresses a specific research question(s) that solves a research problem
- Each is based on theories of how and why embodied interaction matters to cognition, learning, felt experience, emotion, cultural values … in humans.

- You're going to make a (small/simple) tangible research prototype …

Course Syllabus/Schedule

- Schedule: http://www.antle.iat.sfu.ca/courses/iat884/
- Workshops: http://www.wiki.iat.sfu.ca/IAT884/index.php

- Emailed links to students registered in course yesterday afternoon.

If didn't receive it:

1. You are not registered 2. Get it from someone in class

What's in the course -- 1

- Seminar: theories, frameworks, concepts, methodologies for designing and evaluating, exemplars, mine and other people's research.
  - Based on readings, lectures, discussions, videos, prototype deconstructions, Q&A
  - Based on student analysis/presentations of papers
  - Canonical work + Student interests
- Interspersed with some skills development modules (e.g. design thinking, critical making).

What's in the course – 2

- Workshops: learn and practice technical skills in electronics, microprocessors, sensors, motors, communications etc
  - Self-study based on readings, hand-outs, tutorials, exercises.
  - Lots of online resources
  - Kits distributed to students, can also borrow equipment from TECI Lab inventory.

What's in the course -- 3

- Intersection with CanHaptics 501 over Zoom

http://canhaptics.ca/

1-2 seminars ... Maybe more with

CanHap501 - a graduate-level introduction to the inception, creation and evaluation of haptic and multimodal human-computer interfaces.

Students from UBC, Waterloo, McGill, U Manitoba.

Assessment

- Workshop exercises 20%
- Participation in seminar 20%
- Prototype (and video) 25%
- Paper 35%

Project

- Project Proposal: a tangible prototype that is designed to (1) specifically address a research problem and a research question taken from the literature **and** (2) that is designed based on one or more concepts/theories of how humans think/perceive/feel/act according to embodied cognition
- Prototype: build, test, document (video)
- Paper: Argue why your prototype is a viable research instrument to address the research problem and question and how/why it is based on embodied cognition

Educational Goals & 884

Educational Goals for IAT 884 (SIAT Graduate Program)

A. Research, Scholarship and/or Creative Production

Students will be able to:

- Master the substantive constituents of the chosen field of knowledge and/or creative practice [field: Tangible Computing and Embodied Interaction]
- Identify and conduct independent and original research, scholarship and/or creative practice
- Draw from and apply scholarly and artistic reference material

Educational Goals & 884

B. Methodological Tools and Processes

Students will be able to:

- Conduct their work using research methodological tools and processes appropriate to their disciplinary and/or interdisciplinary field
- Use iterative and integrative creative methods and processes where appropriate

Educational Goals & 884

C. Critical Thinking, Problem Solving, Oral and Written Communication and Dissemination

Students will be able to:

- Think critically and creatively, and identify and solve problems in their/**this** field of study.
- Demonstrate excellent communication skills in their field of study through scholarly writing, creative exhibitions and presentations.

Educational Goals & 884

D. Technical proficiency

Students will be able:

- To demonstrate their computational literacy through the use of a programming language and/or electronic prototyping frameworks [882: physical-digital prototypes]
- Choose and use technical tools and processes appropriate to their field of research and/or creative production.

Expectations

- Come to class prepared
- Come to class on time
- Turn off all external communications
- Take responsibility for your own learning
- Leverage your peers
- Do readings/ask questions about readings
- Be engaged, be polite, be curious!
- Advance notice if not at class
- Don’t hand in things late – just don’t.

Academic Integrity

- Plagarism – if you borrow/copy ideas, words, designs, code, images, forms you must cite references, use quotes, and provide copyright information.
- Only use images/videos under CC or with permission.
- Doubling up – no submitting work for two courses
- Copying/cheating – do your own work
- Gear – Don't take anyone else's gear. If you lose/break gear tell us and replace it. Return gear at end of course in same condition. If you sign out gear return it.
- Speak/write respectfully to others – no matter what!
- Authorship – discuss/give credit .. Vancouver convention

SFU Policy

- Expect you to read and be familiar with SFU policy on Academic Honest and Integrity

https://www.sfu.ca/policies/gazette/student/s10-01.html

(google it and read it).