SDES9316
Wearable and Bio-Sensing Interactions

Term T3, 2020

Course Information

Units of Credit: 6

Course Overview

Course Description

Fully Online Delivery Term 3 2020

Some adjustments have been made to this course to allow for fully online delivery during the COVID-19 situation. Please refer to the Resources section at the back of this document for more information about materials and resources required to complete this course online.

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This course focuses on the design, development and evaluation of wearable and biometric (body-sensing) interactions for artistic, wellness, rehabilitation, or educational applications. Students extend their knowledge of interaction design and apply this to the development of a prototype design that analyses and responds intelligently to data collected via analogue and digital biosensors.

The course provides students with an introduction to the theory and practice of wearable and health related digital technology. The past five years have seen tremendous growth in the area of wearable and biometric technologies, and this growth is set to continue. This course provides students with an introduction to design and engineering issues and approaches for addressing the functional and aesthetic requirements these new forms of interactions present.

Course Learning Outcomes

On completion of this course, the student should be able to:

1. Describe and apply key theories, issues and frameworks from the field of human-computer interaction and media arts, to the evaluation of body-focused interactive designs.
2. Develop and refine an interactive prototype, service or environment through an iterative process of research, development, testing and evaluation.
3. Combine wearables and bio-sensing to build a resolved, functioning, body-sensing interactive artefact, service or environment.

Teaching and Learning in this Course

This courses uses a variety of teaching approaches:

Blended/online

- Moodle - Learning Management System

Assessment

	TITLE	WEIGHTING	ASSESSMENT TYPE
Assessment Task 1	Ideas - Research and Conceptualisation	20%	Formal Presentation and Paper

	TITLE	WEIGHTING	ASSESSMENT TYPE
Assessment Task 2	Projects – Investigative Development	30%	Project Proposal
Assessment Task 3	Product – Realisation and Prototyping	50%	Project

Resources

Bohnacker, H. (2012). Generative design : visualize, program, and create with processing. New York: New York : Princeton Architectural Press.

Greenfield, A. (2006). *Everyware : the dawning age of ubiquitous computing*. Berkeley, CA: New Riders.

Hartman, K. (2014). Make - Design, prototype, and wear your own interactive garments. Sebastol, CA: Maker media.

Ishii, H., & Ullmer, B. (1997). *Tangible bits: towards seamless interfaces between people, bits and atoms*.

Jeremijenko, N., Schiphorst, T., Mateas, M., Strauss, W., Wright, W., & Kerne, A. (2002). Extending interface practice: an ecosystem approach. In T. Appolloni (Ed.), *SIGGRAPH '02* (pp. 90-92): ACM.

Norman, D. A. (2004). *Emotional design: why we love (or hate) everyday things*. New York: Basic Books.

Pailes-Friedman, R. (2016). Smart Textiles for Designers: Inventing the Future of Fabric. London, UK: Laurence King

Posch, I. (2017). E-textile tooling: new tools—new culture? *A Systems View Across Time and Space, 6*(1), 1-6. doi:10.1186/s13731-017-0067-y

Reas, C. (2010). Form+code in design, art, and architecture. New York: New York : Princeton Architectural Press.

Ryan, S. E., & Publishing, E. (2014). Garments of paradise: wearable discourse in the digital age. Cambridge, Massachusetts: The MIT Press.

Schiphorst, T. (2011). *Self-evidence: applying somatic connoisseurship to experience design*.

Schwartzman, M. (2011). See yourself sensing : redefining human perception. London: London : Black Dog Pub Ltd.

Seymour, S. (2009). Fashionable technology : the intersection of design, fashion, science, and technology. Wien ; New York: Springer.

Seymour, S. (2010). Functional aesthetics : visions in fashionable technology. New York: Springer.

Takayama, L. (2017). The motivations of ubiquitous computing: revisiting the ideas behind and beyond the prototypes. *Personal and Ubiquitous Computing, 21*(3), 557-569. doi:10.1007/s00779-017-1002-8

Thomsen, B. S. (2012). Signaletic, haptic and real-time material. *Journal of Aesthetics & Culture*, *4*(1), 1–10. https://doi.org/10.3402/jac.v4i0.18148

Wiberg, M. (2014). Methodology for materiality: interaction design research through a material lens. *Personal and Ubiquitous Computing, 18*(3), 625-636. doi:10.1007/s00779-013-0686-7

Week 2 Soft sensors workshop

1. Velostat/Linqstat 7 x 14cm per student

2. Conductive fabric silver 20x20cm

3. Conductive lycra EeonTex 10 x 13cm per student

4. Conductive thread 5m per student

5. Neoprean 20x20cm per student

5. Felt 10 x 10 cm per student

6. Fusable interfacing 15x15 cm per student

Course materials kits are available from Lindsay at Torb and Reiner that contains the above materials: Call Lindsay 03 95044476

Students will need to supply their own

Metal beads (2)

Glass or plastic beads (6)

Fabric

Foam

Sewing needles and thread

Iron

Recomended, each student could find useful (not essential) their own:

Multimeter

LilyPad Arduino USB - ATmega32U4 Board

NOTE: the major project for this course is self directed and you will need to provide materials to create a prototype.