Course Overview

6.S063 Engineering Interaction Technologies
Prof. Stefanie Mueller | MIT CSAIL | HCI Engineering Group
instructor: Stefanie Mueller
Assistant Professor, MIT EECS / MechE

Research:
Human-Computer Interaction & Rapid Prototyping
TA: Jared Counts
MEng, course 6.3
enrollment
admission::
at the end of this class,
we will pass around a sign up sheet.

you must sign in today
to stay enrolled in the class.
enrolled / waitlisted::

I will send an email today with enrolled / waitlist notifications.
goal of this course
#1

learn

• about different fields of interactive technologies
• how the technology evolved over time
• how the underlying engineering concepts developed

multi-touch technology, augmented reality, haptics, shape changing interfaces…
The calculated distribution of force vectors is shown here as a collection of arrows.
augmented reality
haptics
wearable computing
brain computer interfaces
sound interfaces
shape changing interfaces
natural user interfaces
telepresence systems
[...]
what would be the **benefit** of knowing how tech developed over the last 30 years?

<30s brainstorming>
what would be the benefit of knowing how tech developed over the last 30 years?

• be able to predict what comes next
• invent the next big tech
• useful if you want to have a startup or for research
#2

**learn**
- practical *engineering skills*
- required to build those interactive technologies yourself.

laser cutting, 3D printing, electronics, breadboarding…
laser cutting
basic electronics
computer vision with openCV
camera - projector calibration
signal processing
• about how to **showcase your work**
• either for a research paper or an industry demo

photography, rotoscoping, video recording / editing, webpage design, press training
rotoscoping and information graphics
LaserOrigami produces physical 3D objects with a laser cutter.

LaserOrigami: laser-cutting 3d objects

1,056,239 views

video recording / editing
Meet the new Hue app

Designed around you, your home and your everyday life. Play around. Explore. Feel the control but let go every once in a while. Quickly and conveniently control your lights with the Philips Hue app.

Learn more

Create rooms
Quick Control

Scenes
Daily Routines

Home or away
Wake up

Set the Scene
Widgets + Apple Watch

Download on the App Store
GET IT ON Google Play
Freehand laser cutter creates instant flat-pack design

Video: Interactive table lets you make a jar holder
By Colin Barras

You could call it the rebirth of the 2D printer. A new device generates flat pack-like designs in seconds using a laser pointer and a laser cutter – the latest addition to the new field of "interactive fabrication", which promises to further help ordinary consumers become product designers.
open ended project
you will **build** an interactive device…

and **present** it ‘kickstarter style’
HELLOS
Keeping Firefighters Safe

Will Porter
Simon Scott
Yi Tong
Mitchell Karchemsky
büngh the autonomous barrel gauge

**barrels**

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**Field Blend Apple Brandy: readings**

![Graph showing readings](image)

**Comments For Field Blend Apple Brandy**

New Comment

Justin:

ummy yummy
open ended project:
  teams of 1-2 students

requirements for final prototype:
  must involve some laser cut / 3D printed parts
  must involve some custom electronics
  must involve some code you wrote and data via wifi
  must be interactive (senses user input + does sth with it)
  must solve real-world problem
deliveries #1:

- everything required to replicate your prototype
  - laser cut / 3D printable files
  - all electronics you used and where you bought them
  - the code that runs your prototype
deliveries #2:
- **a website** showcasing your work
  - a video in which you pitch your prototype
  - quality photos of your prototype
  - presentation graphics (e.g. a rotoscope)
  - log of your weekly progress at the bottom

http://jicorrea.com/sensory-helmet/
Opportunity

Using the navigation tools from smartphones and digital technology located in the bicycle helmet, it is possible to create ways to direct cyclists through those last hundred meters.

sensory helmet: http://jicorrea.com/sensory-helmet/
we will make time in class to
• find a team mate
• brainstorm ideas
• collect feedback
• do initial prototyping
• ...

but it’s helpful to **start collecting ideas now.**
**project budget**
- project budget of **$50 per student**
- + **micro-controller with wifi module**
- **breadboard** and some other basic components

**reimbursement**
- give Jared your receipts
- put your name on them
- you will get a check in return

**free resources**
- 3D printing at IDC is free
- EDS has many basic electronics on stock
laboratory assignment / problem set
pset: laser cut + electronics + computer vision code
we will do an exercise for each skill you need in class
we give you all materials **on friday** including the micro-controller
grading
no written exams
50% group project
40% laboratory assignments / problem set
10% nano-quizzes

warm up for your group project
not every week, I will announce it
home works

• pass / no pass
• **small exercises**, will be helpful for group project
• **install software / setup controller**, need this for class
location
International Design Center (IDC) and Engineering Design Studio (EDS) both have a workshop!

N52-387

38-501 (this friday!)
class resources
class website with slides:
http://hcie.csail.mit.edu/
engineering-interactive-technologies.html

piazza:
post questions on piazza
do not email us!

office hours:
my office hour is Mondays, 4-5pm.
TA office hours tbd.
this is a new course!
this is the **first time we give this course**, not everything will be perfect but **we will try our best!**

(if you like to have everything perfect this is not the course for you—please come back next year.)
questions?
let's take a 5 minute break!
let’s take a 5 minute break!
end.