Summer School on Computational Interaction 2018

Suggested Hackathon Topics

Probabilistic filtering

Applying probabilistic filtering

Democratic pointing: using the sensor fusion capabilities of probabilistic filters, build a cursor that can be controlled by two or more people, with appropriate uncertainty.

Button-mashing gestures: build a gesture recogniser that recognises motion patterns by dragging the hand over keys on a keyboard.

Finger slider: using webcam input, track the position of the thumb on the forefinger (sliding the “OK” pose), and make an always available tangible slider.

Continuous control dynamics

Pointing without a pointer: Use OpenCV and your webcam to build a ‘pointing without a pointer’ interface where user movements in the real world correlate with a number of possible targets on screen.

> J. Williamson, R. Murray-Smith, *Pointing without a pointer*, CHI, Vienna, p1407-1410, 2004. ISBN:1-58113-703-6

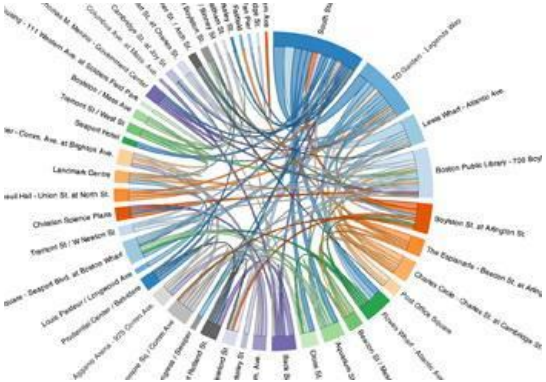
Casual gesture control: Use OpenCV and your webcam to provide control inputs to build a casual interface for photobrowsing that could be used while sitting on a sofa. Think about ‘declutching’ issues and relate the dynamics of your interface to the uncertainty of your gesture classifier.

Probabilistic decoding

Touch based keyboard for use while in motion: Build a decoder based keyboard specifically designed for use by people who need to enter text while walking, running or riding a bike.

Voice assisted text entry corrections: Build a decoder based keyboard and incorporate voice input to probabilistically assist with correcting recognition errors.

Combinatorial optimization



Perceptual optimization of data visualizations: Use known models of human visual system to enhance an information visualization.

Revisiting adaptive GUIs: Update widget layout according to changing patterns of user data. Use a model of user behavior to lower re-learning costs.

Propose your own

- If you don’t like any of the topics you can propose your own
- Make a proposal by end-of-class on **Wed** so we can give you feedback
- Make sure the proposal has a clear relationship to the summer school topics