Summary of Independent Study Fall 2018

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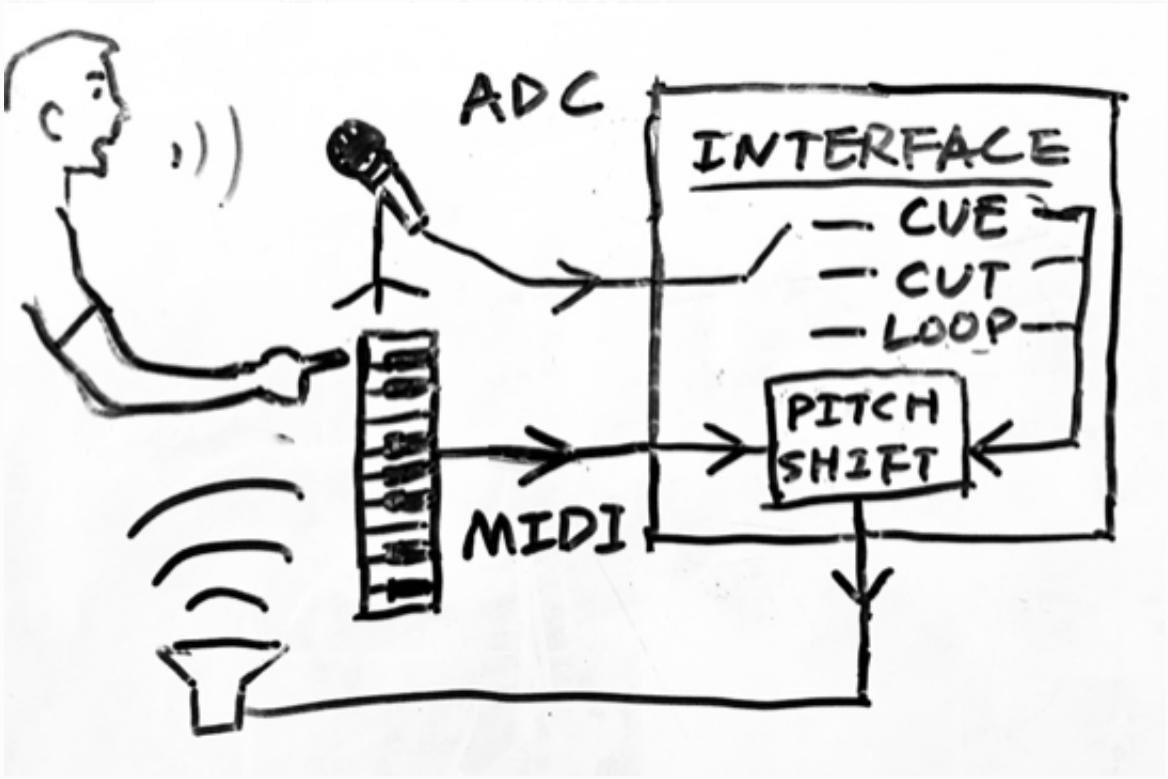
This quarter I started off with sketching out an idea for my masters project (shown below).



The project idea was a combination of 3 different projects I have done in the the past year at MAT.

- midi audio mapping project developed in MAT201A Signal Processing
- soft robotic hand developed in MAT594T Soft Robotics
- audio visualization with Kinect developed in MAT265 Optical Motion Capture

In week 3 of quarter the project idea was deemed unrealizable due to it's complexity.

In week 4 I started exploring new project ideas in Data Visualization, particularly in visualizing topic model data, as required by my research assistant job.

Here are some of the concepts I've learned about (with links to materials studied):

- literate programming (Donald Knuth)

  http://www.literateprogramming.com/knuthweb.pdf

- higher order funciton

https://eloquentjavascript.net/05_higher_order.html

- Data-ink ratio (Edward Tufte)

  https://infovis-wiki.net/wiki/Data-Ink_Ratio

- story-telling data visualization

  https://www.nytimes.com/interactive/2018/11/18/world/asia/world-built-by-china.html (Data Narrative about China's projects abroad)

  https://pudding.cool/2017/02/vocabulary/

  (Hip-hop literacy)

- Topic modeling and related visualization prototypes http://4humwhatevery1says.pbworks.com/w/page/104256241/Research%20on%20Topic%20Modeling

- Word2Vec/ word embedding

  https://projector.tensorflow.org)(https://projector.tensorflow.org/ (Word Embedding VIsualization)

  https://www.analyticsvidhya.com/blog/2017/06/word-embeddings-count-word2veec/ (introduction)

  https://developers.google.com/machine-learning/crash-course/embeddings/video-lecture (online course)

In addtion to these concepts I am also learning JavaScript and D3.js, a data visualization library built for JavaScript using online resources and by reading the free online book *Eloquent JavaScript*.

At the end I want to categorize the different visualizations I discovered and try to find the optimal attributes for my own project.

(see folder for catagory images)

Links:

https://pudding.cool/2018/10/city_3d/ (HumanTerrain)

https://pudding.cool/2017/03/film-dialogue/ (film Dialogue)

https://www.booooooom.com/2015/04/02/dear-data-a-fascinating-year-long-hand-drawn-data-visualisation-project/ (Dear Data)

https://www.youtube.com/watch?v=rJC7B-9ZfhE (CGI Reel)

https://www.youtube.com/watch?v=1iAtPhWEV9I (my Brush)

Future Direction:

I want to create a project that shows insight and expression, not just a tool or something "pretty".

A good example is *Data Mask* by Sterling Crispin http://www.sterlingcrispin.com/data-masks.html

In this project Crispin used the sculptrual form of artistic expression to analyze and reflect on the impact of serveillance on personal and social privacy. So one direction I could take is to investigate a social phenomenon, find out the current trends, Analyze related data and gain some insight from it, and finally visualize it in an intuitive and creative way. (e.g. the popularity of live streaming video platforms among children and teens)