**Project Proposal**

**Goal:** To design software that can de-noise an instrumental recording (in this case, flute) through a video analysis of fingerings.

**Task 1:** Finger Tracking and Note Detection

* Get a white glove and paint the thumb blue and the fingertips different colors
* Use **OpenCV** to track the position of the colors relative to a baseline measure, and thus track finger positions (down/up = covering/not covering hole)
* Have different down/up sequences correspond to different fingerings, and therefore notes
* Record notes and times that each note changes in a data structure

**Task 2:** Record audio file into WAV format – use PyAudio and wave

**Task 3:** Allow user to specify which portions of the recording should be modified

* Build interactive user interface in Tkinter
* Replace specified portion of the recording with pre-recorded note sequences
  + Have each note play in a loop for the amount of time it is called
  + Group the artificial note sequence into one audio block and replace
  + Implement a smoothing function to integrate with rest of the recording