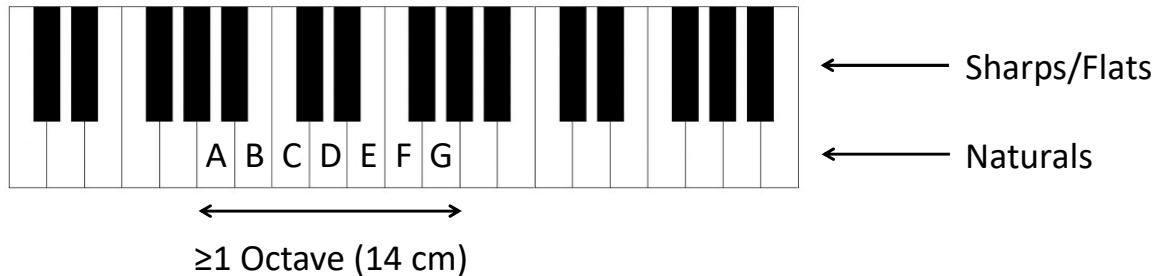


# Elec 391 Design Project (2025-W2)

## Robo-Maestro



Any song you choose

## Specifications

- Range
  - 1 Octave (req)
  - >1 Octave (goal)
  - Natural & Sharp/Flat (req)
- Speed
  - $\frac{1}{4}$  Notes (req)
  - $\leq \frac{1}{8}$  Notes (goal)
- Musical Options
  - Chords (goal)
  - Sustain (goal)
- Goal
  - Song lyrics displayed while playing
  - Sheet music advances while playing
- Constraints
  - Full-size piano keyboard (almost)
  - Physical interface
    - TBD
- Trade-Off
  - Capabilities (# of solenoids)
  - Speed (mass of solenoids)

## Options

- Linear Stage
  - Lead-screw
  - Timing belt
  - Linkage
- Actuator
  - Linear solenoid
  - Rotary solenoid
  - Magnetic
  - Reluctance
- Song Choice
  - Recognizable
  - Exercises all capabilities
  - Vocal accompaniment
  - Instrumental accompaniment

## Provided

- Linear Rail
  - 500mm Length
  - Mount to plywood
- 3D Connection Interface
  - Print & connect to plywood
  - Directly in front of keyboard

Mount your design to a piece of plywood that fits in front of keyboard.

