

# SNGH\* Checklist

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## 1 FFT Generation (Rhys)

The FFT Handler will:

- Loop back guitar audio to headphones
- Buffer incoming audio
- Window audio for FFT processing
- Buffer FFT output
- Provide FFT data for peak detector and FFT display

## 2 Peak Detection (Rhys)

The Peak Detector will:

- Identify local maxima in FFT output
- Reject peaks with low power

## 3 Harmonics Processor (Rhys)

The Harmonics Processor will:

- Identify peaks with integer-multiple frequency of other peaks
- Separate fundamental frequencies from their harmonics
- Reject peaks without harmonics

## 4 FFT Display (Rhys and Ruth)

Rhys generates the signals and writes to the buffer, Ruth generates a display from the buffer. The FFT portion of the display will demonstrate:

- Display frequency range relevant to guitars (includes 80-800Hz)
- Color-code detected peaks, fundamentals, and harmonics
- Display names of detected notes (time permitting)

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\*Some of these are Not Going to Happen

## 5 Timespace Filtering (Ruth)

The Timespace Filter will be able to:

- Reject transient fundamentals
- Correctly identify musical notes by frequency
- Correctly detect chords played one string at a time (time permitting)

## 6 Chord Detection (Ruth)

The Chord Detector will:

- Detect requested chords
- Detect and identify incorrect chords
- Name the string that causes the chord to be incorrect, if there's only one wrong string (time permitting)

## 7 Gameplay (Ruth)

The interactive game portion of SNGH will:

- Request preprogrammed sequences of notes and chords
- Validate notes and chords
- Provide programmable time limit for playing a chord
- Provide choices for chord sequences via a menu (time permitting)
- Guitar tuning mode (time permitting)

## 8 Main Display (Ruth)

SNGH's main display will show:

- Miniature version of FFT display
- Current requested chord displayed as a tab (including chord name)
- The next chord to be requested
- The current game score
- A countdown timer bar indicating time remaining to play the chord
- Feedback on the chord played - if it was correct, and what it was if it was wrong
- Recommended chord fingering (time permitting)
- Celebratory dancing dinosaurs (time permitting)