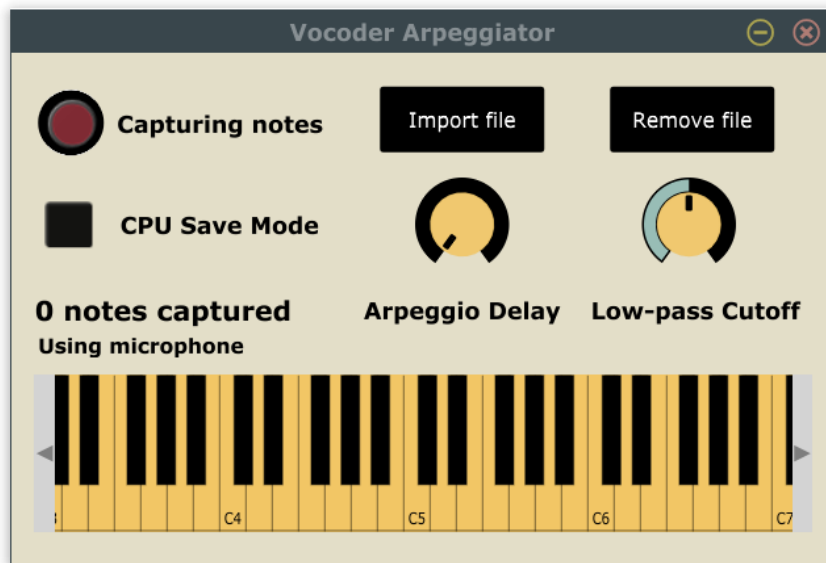# Musical Signal Processing - Final Project - Documentation

Vocoder Arpeggiator

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Vocoder Arpeggiator is a Cabbage plugin written in Csound. It is a classic channel vocoder, but with the possibility to arpeggiate notes from a base fundamental.

The plugin presents two main modes that can be switched with the red button.

Red Capturing Button: Switch between modes:

- **Capturing Notes**: The notes that will be triggered, and thus the intervals between them, will be stored. A maximum of 5 notes can be captured.
- **Playing**: When a note is triggered, a vocoder with the note will be played, alongside with the arpeggiated intervals stored in the Capturing Notes mode. Notes in the arpeggio that surpass the C6 threshold will be ignored, since the system would overflow.

Import File: By default, the signal that wil be vocoded is the input from the microphone, but a file can be imported to be analysed.

Remove File: Remove the imported file and go back to using the microphone.

Arpeggio Delay: Delay between notes of the arpeggio. If 0, the notes will be played all at the same time.

Low-pass Cutoff: Multiplier of the cutoff frequency of a Butterworth low-pass filter.

CPU Save Mode: The default mode of the plugin is to use an independent oscillator, frequency analysis and cross-fade analysis for each note in the arpeggio. If this mode is activated, these elements will be used once only for the fundamental note, while the rest of the notes will be computed using a pitch shift. This mode is way cheaper in terms of CPU usage, but the results are not as good, particularly with high frequencies.