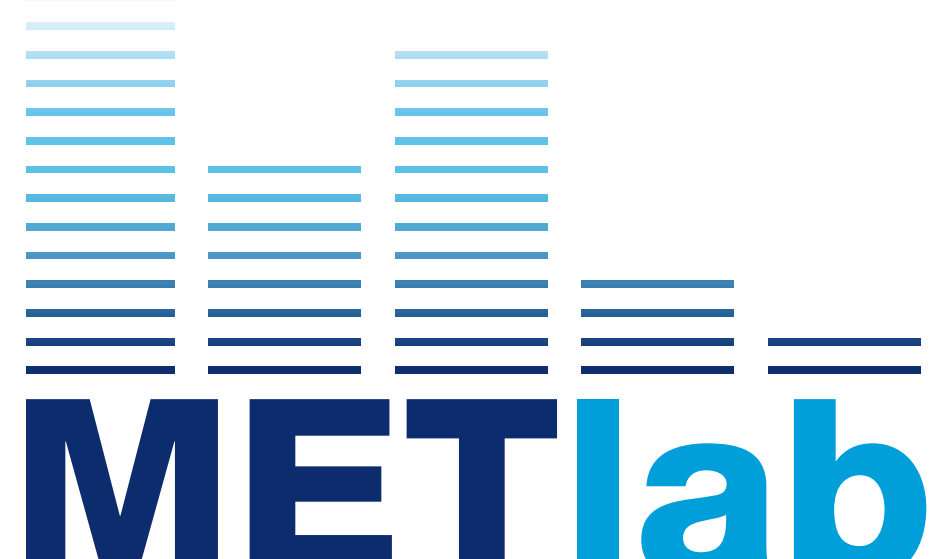


# Towards Unsupervised Acoustic Guitar Transcription

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## Overview

- Deep neural network design for pitch estimation of acoustic guitar chords.
- Trains without requiring labeled data.
- Network consists of a trainable analysis part and a fixed synthesis part.
- The analyzer produces pitch estimates from an input spectrogram.
- The synthesizer uses pitch estimates to reconstruct the original input.
- As the network improves its reconstructions, it learns to produce accurate pitch estimates.
- We discuss two variants for the synthesis part: component note synthesis and Karplus-Strong synthesis.

## Synthesis Modes

Component Note Synthesis	Karplus-Strong Synthesis
Weighted sum of single guitar note recordings	Plucked-string physical model. Noise low-pass filtered in a feedback loop.
Realistic acoustic guitar timbre	Unrealistic acoustic guitar timbre
Limited to a discrete set of pitches	Approximate continuous range of pitches available via interpolation
Takes in pitch weight vector	Takes in pairs of pitch/amplitude values

## Proposed Network Design

