

Stompboxes: Kicking the Habit Gregory Burlet, Marcelo M. Wanderley, Ichiro Fujinaga gregory.burlet@mail.mcgill.ca marcelo.wanderley@mcgill.ca ich@music.mcgill.ca

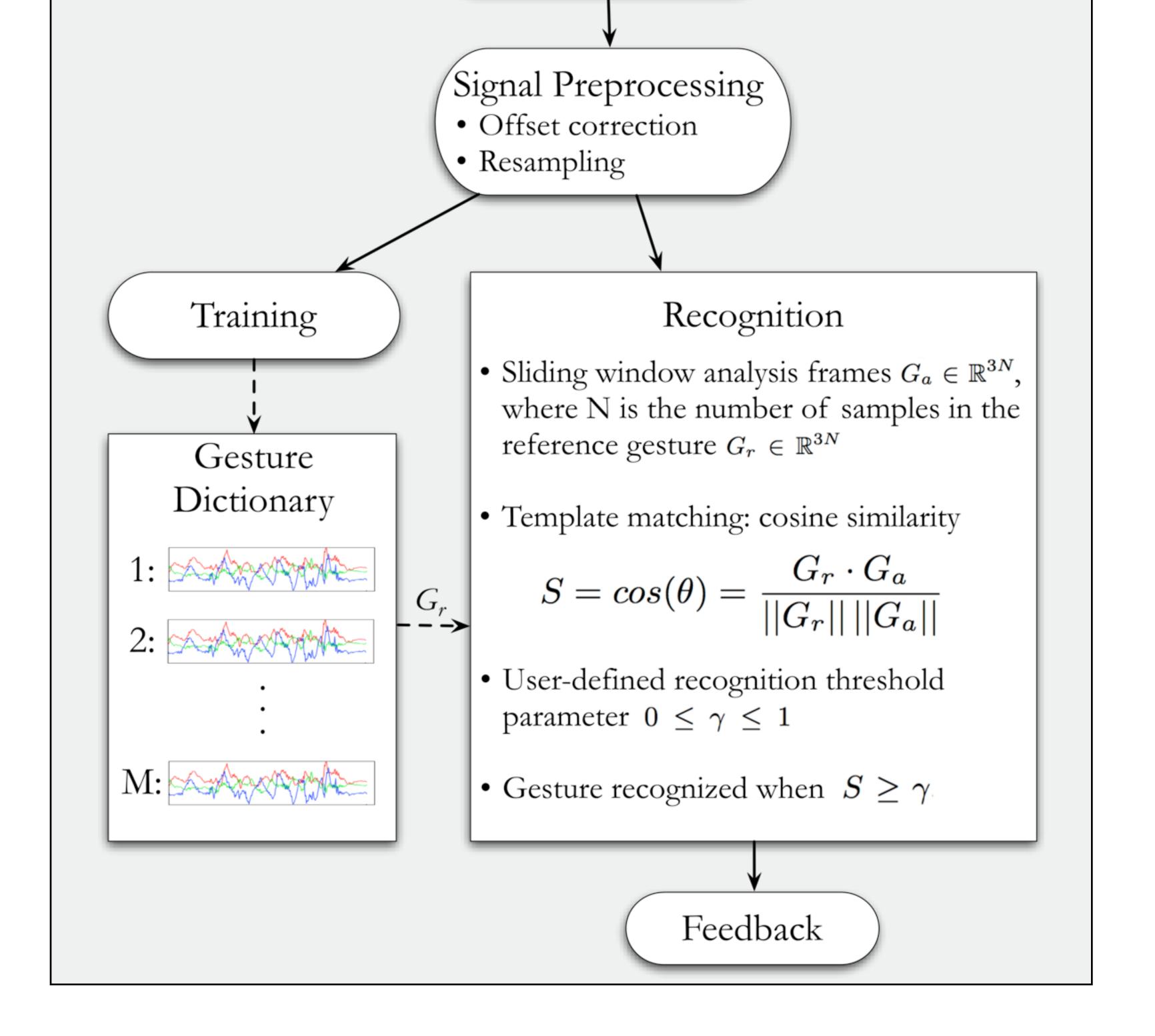
Department of Music Research • Schulich School of Music • CIRMMT, McGill University • Montréal, Canada

Overview

- Sensor-based gesture recognition for managing an overwhelming number of audio effects in live guitar performances
- Train personalized gestures
- Upon recognition of gesture, toggle appropriate audio effects and provide feedback
- Evaluation:

86% accuracy for user-independent recognition 99% accuracy for user-dependent recognition

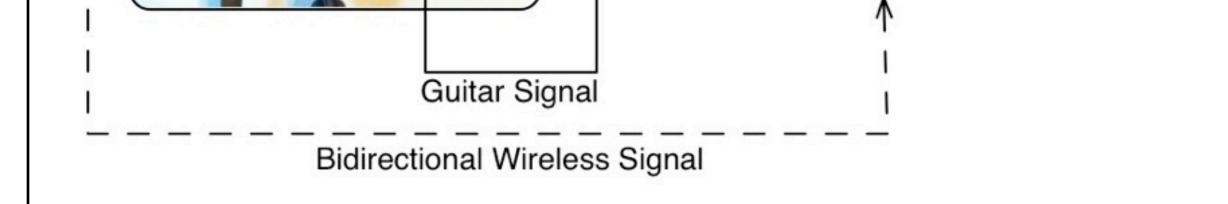
Hardware Configuration Amplifier Audio Interface Modified Guitar Signal BUILDA MAXMSP MESA



Gesture Recognition

Accelerometer Signal

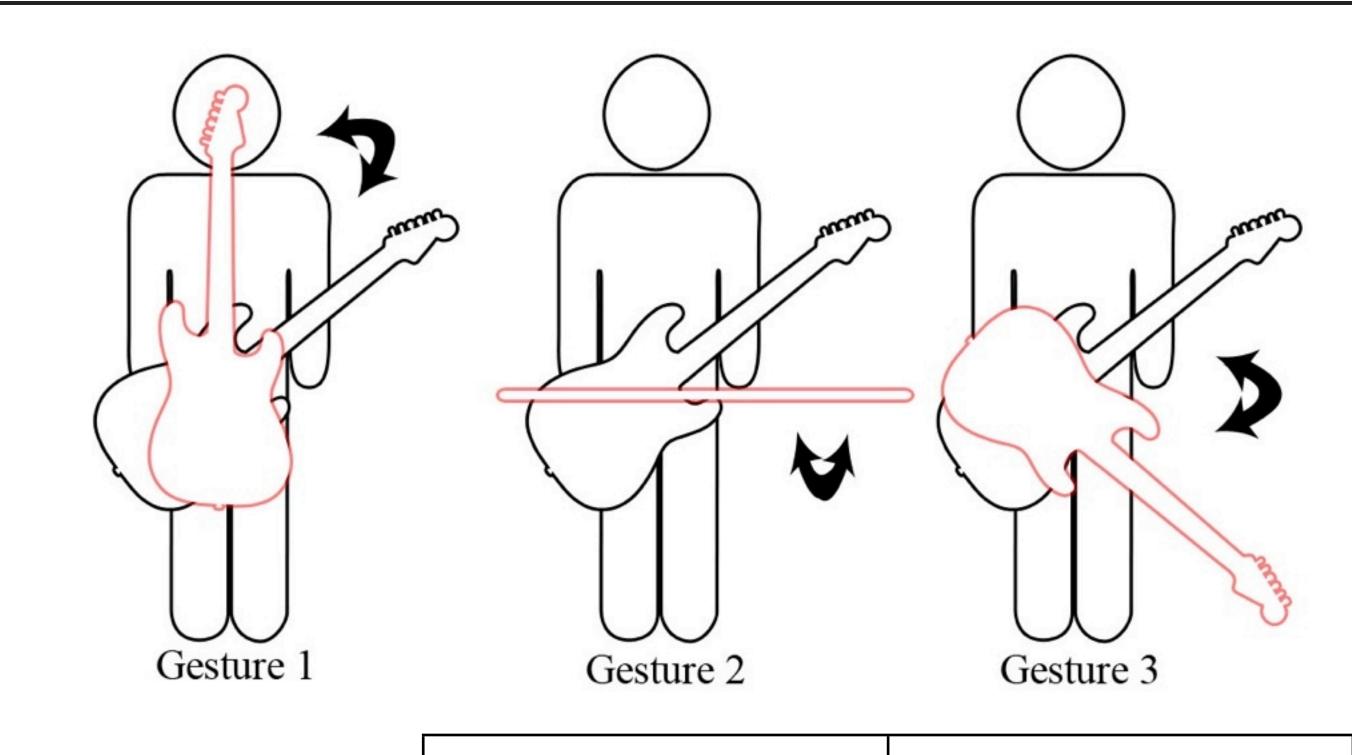
A[n] = (x[n], y[n], z[n])



Software

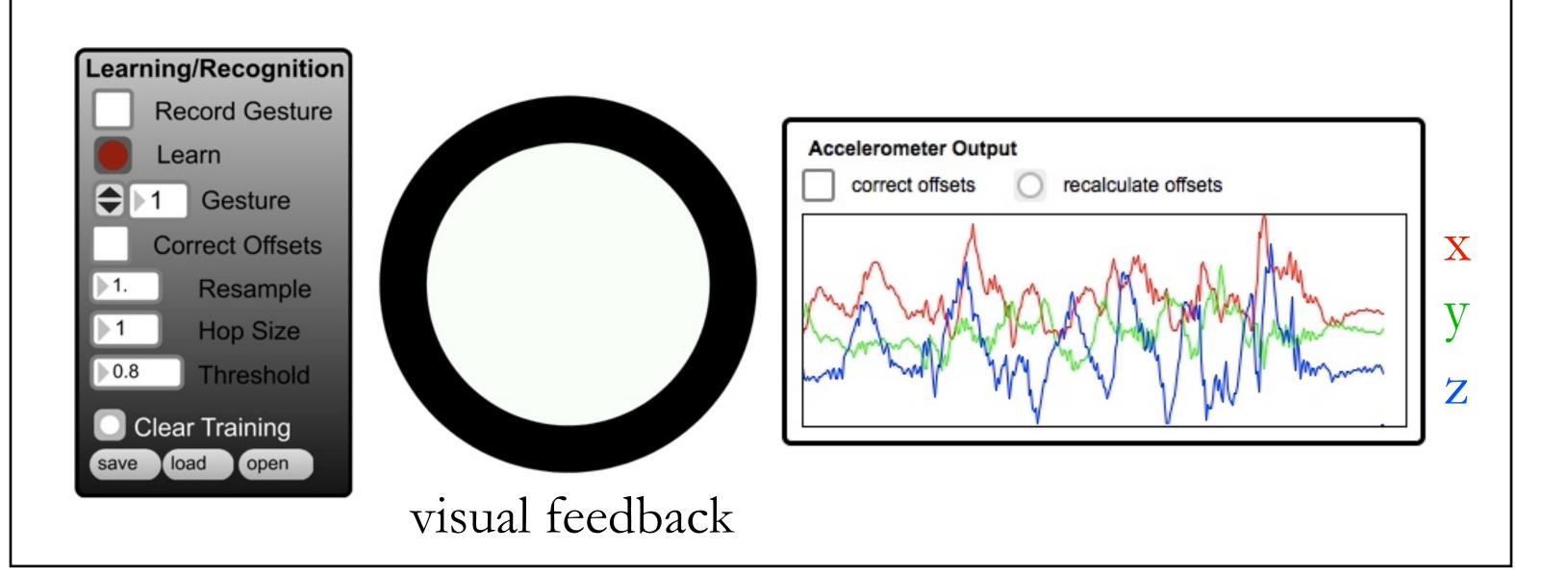
- Max/MSP guitar effects rack with a collection of digital audio effects connected in series
- Touch OSC iPhone application retrieves accelerometer signal wirelessly (UDP connection). Audio effect parameters may be continuously modified by accelerometer signal
- Effect preset programming: apply multiple audio effects with stored parameters to guitar signal
- Song structure programming: enter sequence of effect presets required to perform a piece

Evaluation



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User Interface



	User-independent	User-dependent
Gesture 1	94%	97%
Gesture 2	99%	100%
Gesture 3	84%	100%
Average	86%	99%

- Ten right-handed participants. Half are guitar players
- Results suggest that guitarists should train personalized gestures to toggle audio effects







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