

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

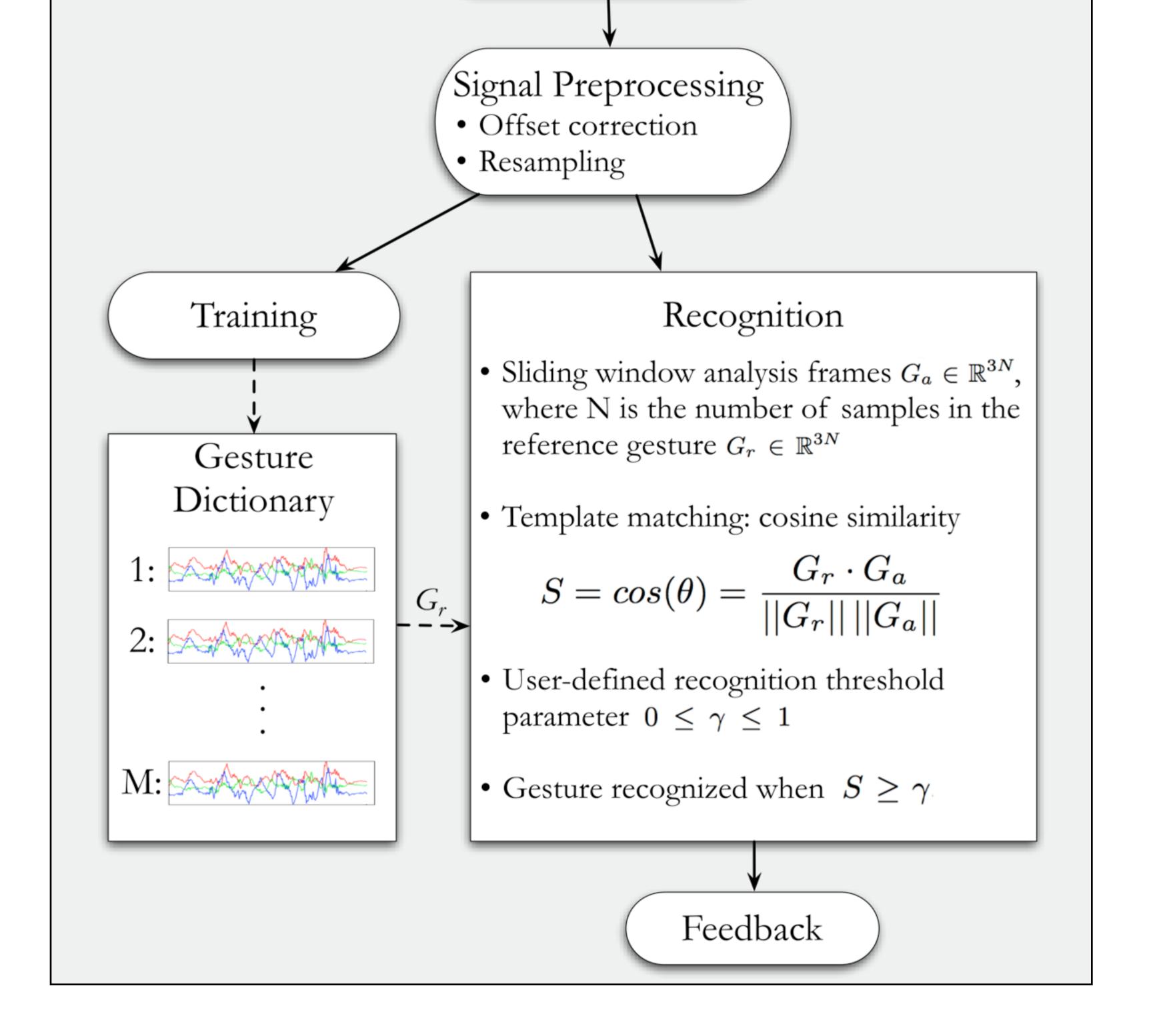
Department of Music Research • Schulich School of Music • CIRMMT, McGill University • Montréal, Canada

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

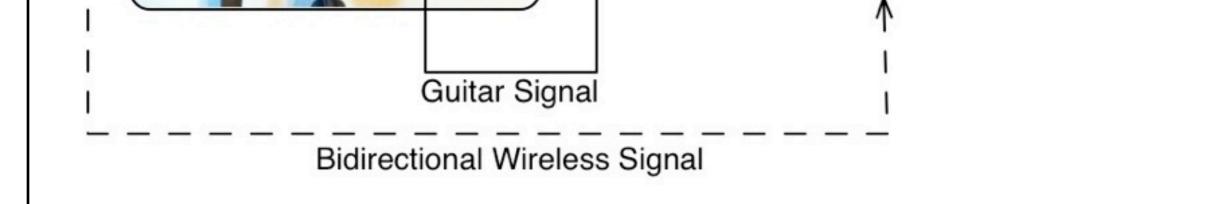
Hardware Configuration Amplifier Audio Interface Modified Guitar Signal BUILDA MAXMSP MESA



Gesture Recognition

Accelerometer Signal

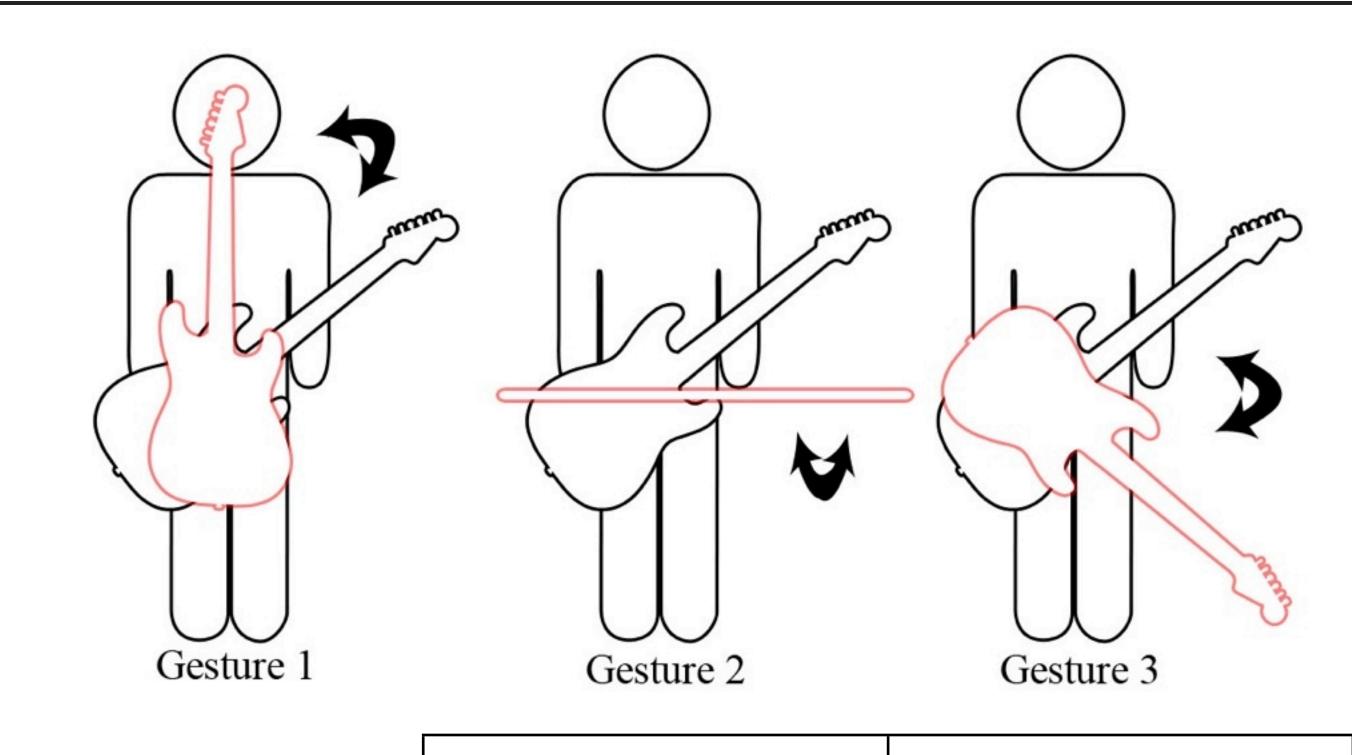
A[n] = (x[n], y[n], z[n])



Software

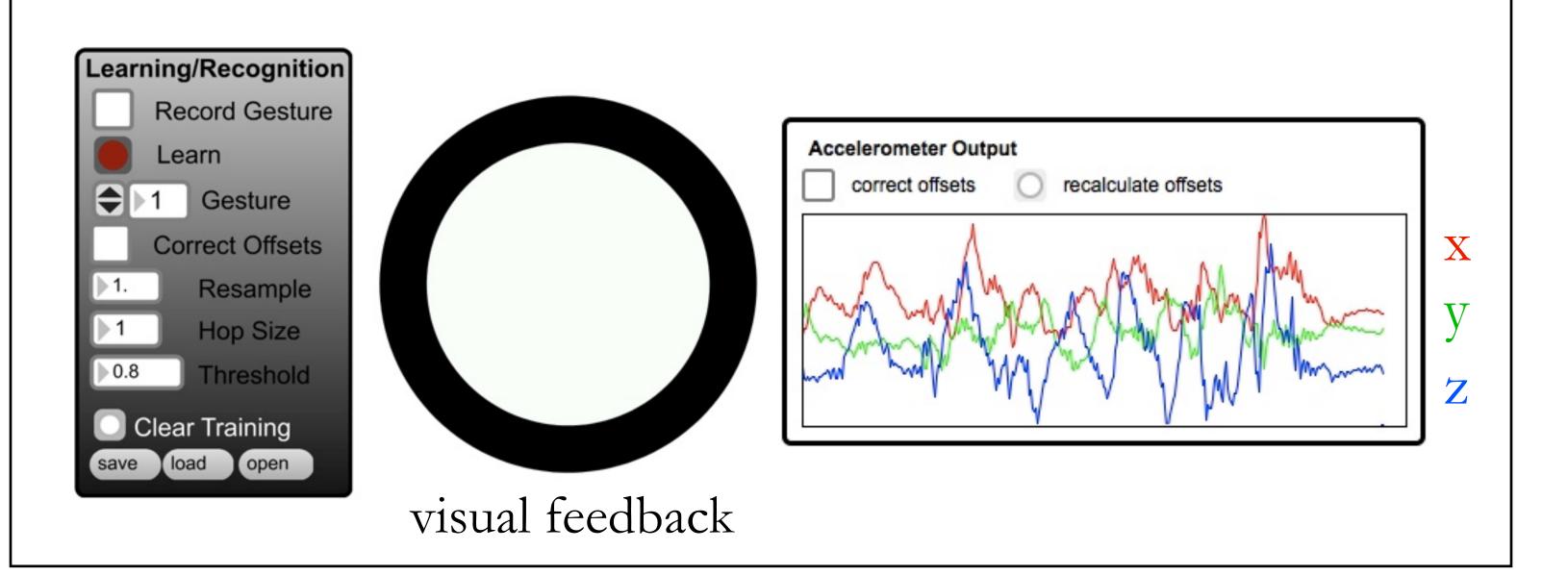
- Max/MSP guitar effects rack with a collection of digital audio effects connected in series
- Touch OSC iPhone application retrieves accelerometer signal wirelessly (UDP connection). Audio effect parameters may be continuously modified by accelerometer signal
- Effect preset programming: apply multiple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

Evaluation



TT TT

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







Social Sciences and Humanities **Research Council of Canada**

*

Conseil de recherches en sciences humaines du Canada

