

## Gestural Music Interfaces using Pattern Recognition

Music and arts have been continuously evolving due to our efforts in building creative and expressive instruments and interfaces. While we have mastered building a wide variety of physical instruments, the quest for virtual instruments and sound synthesis is on the rise. Virtual instruments are essentially softwares that enable musicians to interact with a sound module in the computer. Since the invention of MIDI (Musical Instrument Digital Interface), devices and interfaces to interact with sound modules like keyboards, drum machines, joysticks, mixing and mastering systems have been flooding the music industry.

Research in the past decade accelerated in interacting through simple musical gestures to create, shape and arrange music in real time. Machine learning is a powerful tool that can be smartly used to teach simple gestures to the interface. The ability to teach innovative gestures and shape the way a sound module behaves unleashes the untapped creativity of an artist. Timed music and multimedia programs like Max/MSP/Jitter along with machine learning techniques are gateways to embodied musical experiences without physical touch. Picking sensors (Leap Motion) that drive the algorithm and using the sensor data smartly is the real challenge in pattern recognition models. This talk presents my research, results and how this interdisciplinary field of research could be used to study wider neuroscience problems like embodied music cognition and human-computer interactions in art.