Engineering and Music
from Guitar Hero to Intelligent Machines

Elaine Chew
University of Southern California
Viterbi School of Engineering
Thornton School of Music
Engineering Freshmen Academy
October 2010

Music Games

Guitar Hero
Eran Egozy & Alex Rigopoulos
www.GuitarHero.com
Ocarina

Ge Wang
Stanford

Music Playing Robots

McBlare

Roger Dannenberg
CMU

Haile

Gil Weinberg
Georgia Tech

Elaine Chew, USC Engineering Freshmen Academy
Shimon

Guy Hoffman
Georgia Tech

Analysis Tools

MuSA.RT
Interactive tonal analysis and visualization

www.youtube.com/watch?v=92twNfPUuUs

Distributed Immersive Performance

Elaine Chew, USC Engineering Freshmen Academy
Sonic Visualiser

DIP: Evaluation of Ensemble Coordination

Computer-Assisted Composition
Melody to be harmonized
Radiohead’s Creep
Style learned from Fiona Apple’s Never is a promise
Generated Accompaniment

Hyperscore
Mary Farbrook, NYU
web.media.mit.edu/~mary/hyperscore.html

ASSA
automatic style-specific accompaniment

Interactive Musical Improvisation

François Pachet
SONY CSL
OMax

Mimi
Alexandre François, Dennis Thurmond, Elaine Chew


Analyzing Musical Creation

Mimi is: learning planning
Isaac’s note: “Mimi still has this big sheet in its memory. Try to play a lead up to it.”
Expressive Music Performance

Kreisler plays Kreisler

Christopher Raphael
Indiana University, Bloomington

Music Plus One

Performance/Air Worm

Werner Goebel
Simon Dixon
Gerhard Widmer
OFAI

xavier.informatics.indiana.edu/~raphael/music_plus_one
ESP

A literal take on the driving metaphor for expressive performance

Music Information Retrieval
Engineering and Music: from Guitar Hero to Intelligent Machines

Tom Conrad
Pandora

www.pandora.com

Avery Wang
Shazam

www.shazam.com

International Society for Music Information Retrieval

www.ismir.net

Elaine Chew, USC Engineering Freshmen Academy