Sound and Music Computing

New Interface for Musical Expression

Ma Ke

Scope:
PostDigital

TECHNOLOGY

Sensor
Motor
Bioelectronic
Ubiquitous Computing
Communication
Computer Vision
Music Computing
Creative Programming
Wearable
Web Technology
Robotics
AI/Machine Learning
AR/VR/MR

+ MEDIA

Sound & Music
2D/3D Visual
Lighting
Mechanical Structure
Human Nervous System
Human Motion
Robots
User Interface

-> Form

Interactive Installation
Smart Product
Wearable Device
Digital Instruments
Art Performance
Web/Mobile Application
Social Robots

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Suggested Course Modules

TECHNOLOGY

Interactive Sound & Music
Biosensors & Bioelectronics
Tangible Interaction
Advanced Computer Vision
Speech Recognition & Synthesis
Human-Robot Interaction
Interactive User Interface
Artificial Intelligence

+ INNOVATION

Design Thinking
Interaction Design
Human-Computer Interaction
Design Skills & Tools

Interactive Sound & Music

bridging digital technologies and music

Sub-topics

MIDI
Music and Sound Computing
Electronic Music Application
Digital Musical Instruments
Interactive Musical Installation
Music Synthesis & Performance

Interactive
Sound & Music

Interaction Framework

INPUT → **MAPPING** → **OUTPUT**

human interaction — creation — musical expression

Tactile

touch | clap | beat | knock...

In-Air

gesture | skeleton | movement

Tangible

rotate | move physical matter

CV-based facial expression

emotion | expression | eye-contact | head rotation

Nature language

command | dialogue | frequency spectrum

Notes

pitch | velocity | channel

Electronic music

progression | timbre | instrument | rhythm | effects

Composition

chords | generation | patterns

Synthesizer

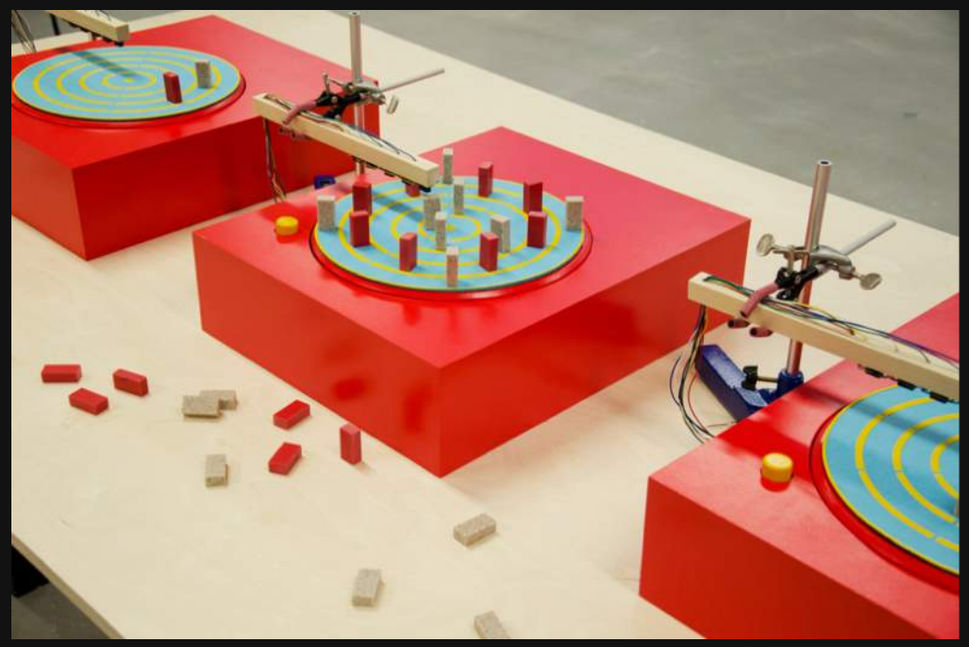
oscillator | FM/AM | decay

Performance

3D-audio

Interactive Electro-acoustic Music

Inspirations



Beat Blox

Arduino + Distance sensor + Turntable + Sound

The installation includes three turntables, all with built in Arduino, midishield and a total of 15 digital distance sensors. As the user adds a block to the deck, the distance sensor plays a sound.

VIDEO

Five Guys

Arduino + Sensor + Max for live

The project includes five lights, each of which plays a unique voice. It allows anyone to create and experiment with music in a playful and tangible way.

VIDEO

Interactive Electro-acoustic Music

Inspirations

Xylophone

Arduino + Touch sensor + Live

VIDEO

Sound of Threads

Arduino + Sensor + sound + live performance

The second part was a small room where people were invited to create their own „music piece“ by merely using their body. In touching wires, that were hanging from the ceiling, and by walking and dancing bare foot in this room, temporarily closed electric circuits start single samples of music, all based on the random performing of the visitors..

VIDEO