# 4. Use cases

## *Generative Music AI*

THE SOUND OF AI

upf. Universitat Pompeu Fabra Barcelona

MTG Music Technology Group

# Overview

- How to classify GM systems
- Sample industry use cases
- Business opportunities

# Classifying generative music systems

# Classifying generative music systems

- What’s the goal of the system?

# Classifying generative music systems

- What’s the goal of the system?

Melody

Chord progressions

Full-tracks

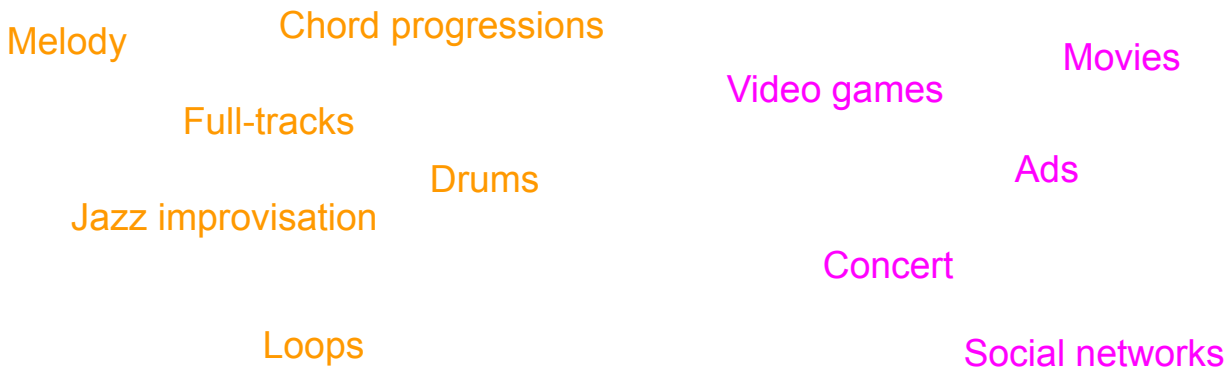
Drums

Jazz improvisation

Loops

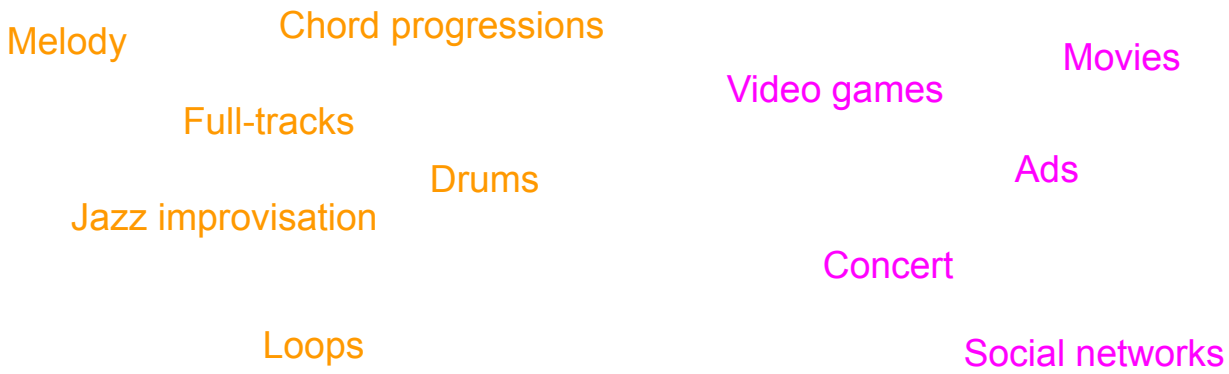
# Classifying generative music systems

- What's the goal of the system?



# Classifying generative music systems

- What's the goal of the system?



# Classifying generative music systems

- What’s the goal of the system?
- Who uses the system?

# Classifying generative music systems

- What's the goal of the system?
- Who uses the system?

Composers

Songwriters

Developers

Researchers

Consumers

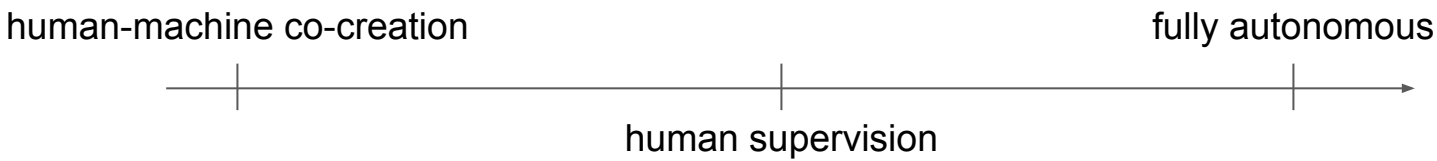
Marketing agency

# Classifying generative music systems

- What's the goal of the system?
- Who uses the system?
- How autonomous is the system?

# Classifying generative music systems

- What's the goal of the system?
- Who uses the system?
- How autonomous is the system?



# Classifying generative music systems

- What's the goal of the system?
- Who uses the system?
- How autonomous is the system?
- How is music generated?

# Classifying generative music systems

- What's the goal of the system?
- Who uses the system?
- How autonomous is the system?
- How is music generated?
- How is music represented?

# Melodrive

- Goal
- User
- Autonomy
- Generative techniques
- Music representation

# Melodrive

- Goal -> Full video game tracks
- User
- Autonomy
- Generative techniques
- Music representation

# Melodrive

- Goal -> Full video game tracks
- User -> Developers
- Autonomy
- Generative techniques
- Music representation

# Melodrive

- Goal -> Full video game tracks
- User -> Developers
- Autonomy -> Human supervision
- Generative techniques
- Music representation

# Melodrive

- Goal -> Full video game tracks
- User -> Developers
- Autonomy -> Human supervision
- Generative techniques -> ML + rule-based
- Music representation

# Melodrive

- Goal -> Full video game tracks
- User -> Developers
- Autonomy -> Human supervision
- Generative techniques -> ML + rule-based
- Music representation -> Symbolic

# Aiva

- Goal
- User
- Autonomy
- Generative techniques
- Music representation

# Aiva

- Goal -> Full tracks for bg music
- User
- Autonomy
- Generative techniques
- Music representation

Aiva Technologies

# Aiva

- Goal -> Full tracks for bg music
- User -> Composers
- Autonomy
- Generative techniques
- Music representation

# Aiva

- Goal -> Full tracks for bg music
- User -> Composers
- Autonomy -> Human-machine collab
- Generative techniques
- Music representation

Aiva Technologies

# Aiva

- Goal -> Full tracks for bg music
- User -> Composers
- Autonomy -> Human-machine collab
- Generative techniques -> DL + rule-based
- Music representation

Aiva Technologies

# Aiva

- Goal -> Full tracks for bg music
- User -> Composers
- Autonomy -> Human-machine collab
- Generative techniques -> DL + rule-based
- Music representation -> Symbolic

Aiva Technologies

# Text-to-music generation

- Generate full score conditioned on text description
- Social networks
- Minimal human input
- Deep learning
- Audio representation
- MusicLM, MusicGen, Mubert

# Singing voice cloning

- Generate / clone voice
- Producers, wanna-be musicians
- Human-machine collaboration
- Deep learning
- Audio representation

# Singing voice cloning

This article is more than **4 months old**

## AI song featuring fake Drake and Weeknd vocals pulled from streaming services

**The song, called Heart on My Sleeve, has been removed from TikTok, Spotify and YouTube for 'infringing content created with generative AI'**

# Singing voice cloning

# Automatic accompaniment

- Instrumental accompaniment of lead vocals
- Amateur musicians
- Human-machine collaboration
- Deep learning / rule-based techniques
- Symbolic representation
- Nootone

# Sound synthesis

- Generation of “alien” sounds
- Mid / pro producers
- Human-machine collaboration
- Deep learning
- Audio representation

# Sound synthesis: NSynth (Google)

# Open Source Research (The Sound of AI)

- Voice-to-sound synthesizer
- Community-driven research project
- 150+ people
- 2 years
- Paper published at AIMC 2022

# Business opportunities

## Tech giants

Music democratization

## Startups

Musicians’ tools

# Key takeaways

- Classify GM systems based on:
  - goal
  - users
  - autonomy level
  - generative techniques
  - representation

# Key takeaways

- Classify GM systems based on:
  - goal
  - users
  - autonomy level
  - generative techniques
  - representation
- Lots of industry use cases

# Key takeaways

- Classify GM systems based on:
  - goal
  - users
  - autonomy level
  - generative techniques
  - representation
- Lots of industry use cases
- Startups -> musicians’ tools
- Tech giants -> consumers

# What next?

Ethics of generative music