

1. Course Intro

Computational Music Creativity



Universitat
Pompeu Fabra
Barcelona

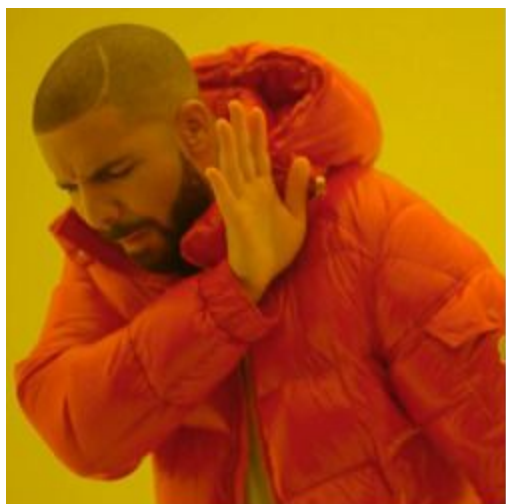
MTG
Music Technology
Group



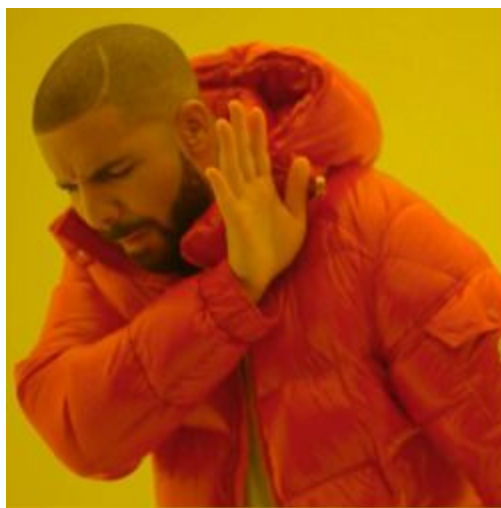


Valerio Velardo

- Musician + AI + programmer
- PhD in AI music
- CEO and founder @ Melodrive
- Head of MLOps @ Utopia Music
- Founder @ The Sound of AI
- AI music consultant + recruiter
- Founder + CTO @ Transparent Audio



Computational Music Creativity



Computational
Music
Creativity



Generative
AI Music

Part 1
Symbolic

Part 2
Audio



Part 1

Symbolic

Part 2

Audio



Teaching Assistant (Part 1)



Anmol Mishra

Overview

1. Survey
2. Part 1
3. Part 2 (Lonce)
4. Activities

Survey

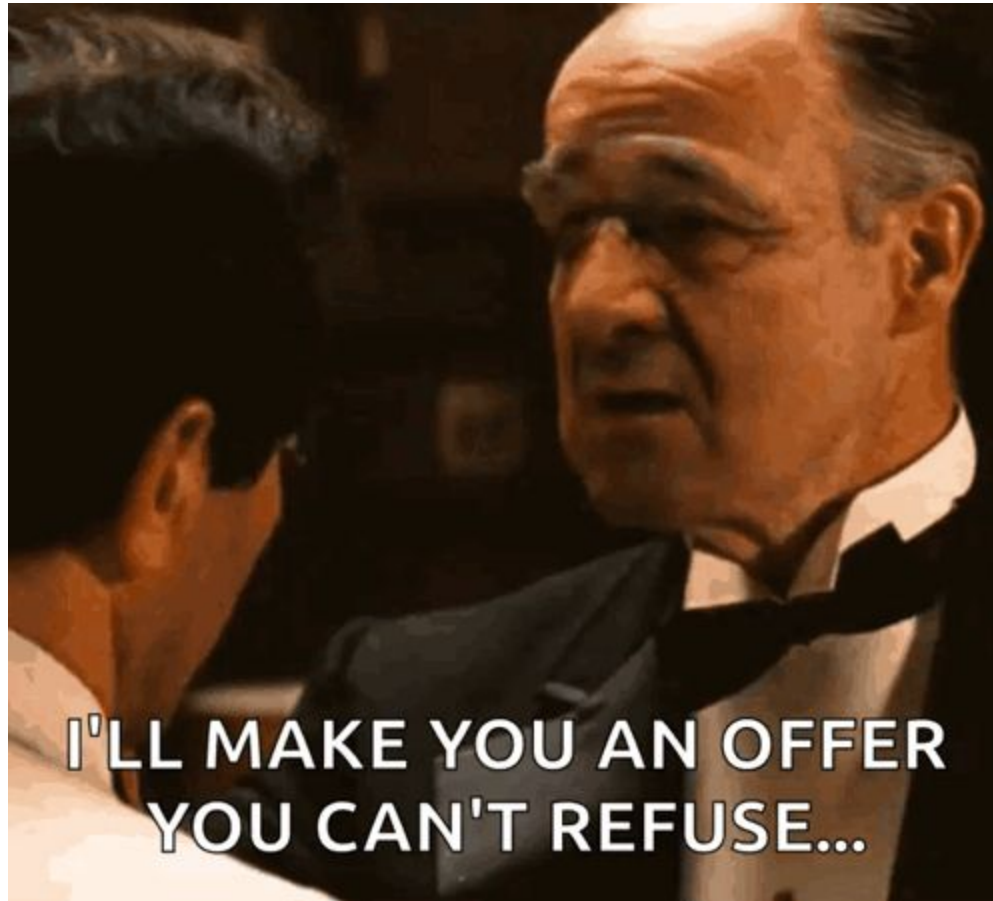
- Goal: Understand your experience
- 5 minutes
- <https://forms.gle/ekWwsJPHEBDfY5Pp7>

2. Part 1

Website

Repository





I'LL MAKE YOU AN OFFER
YOU CAN'T REFUSE...

You give

110% of your
commitment, and
effort

You get

Mindset + skills to
be hired as a
gen AI mus engineer

TOUGH

TOUGH

EXCELLENCE

Welcome my new
junior AI music
engineers!

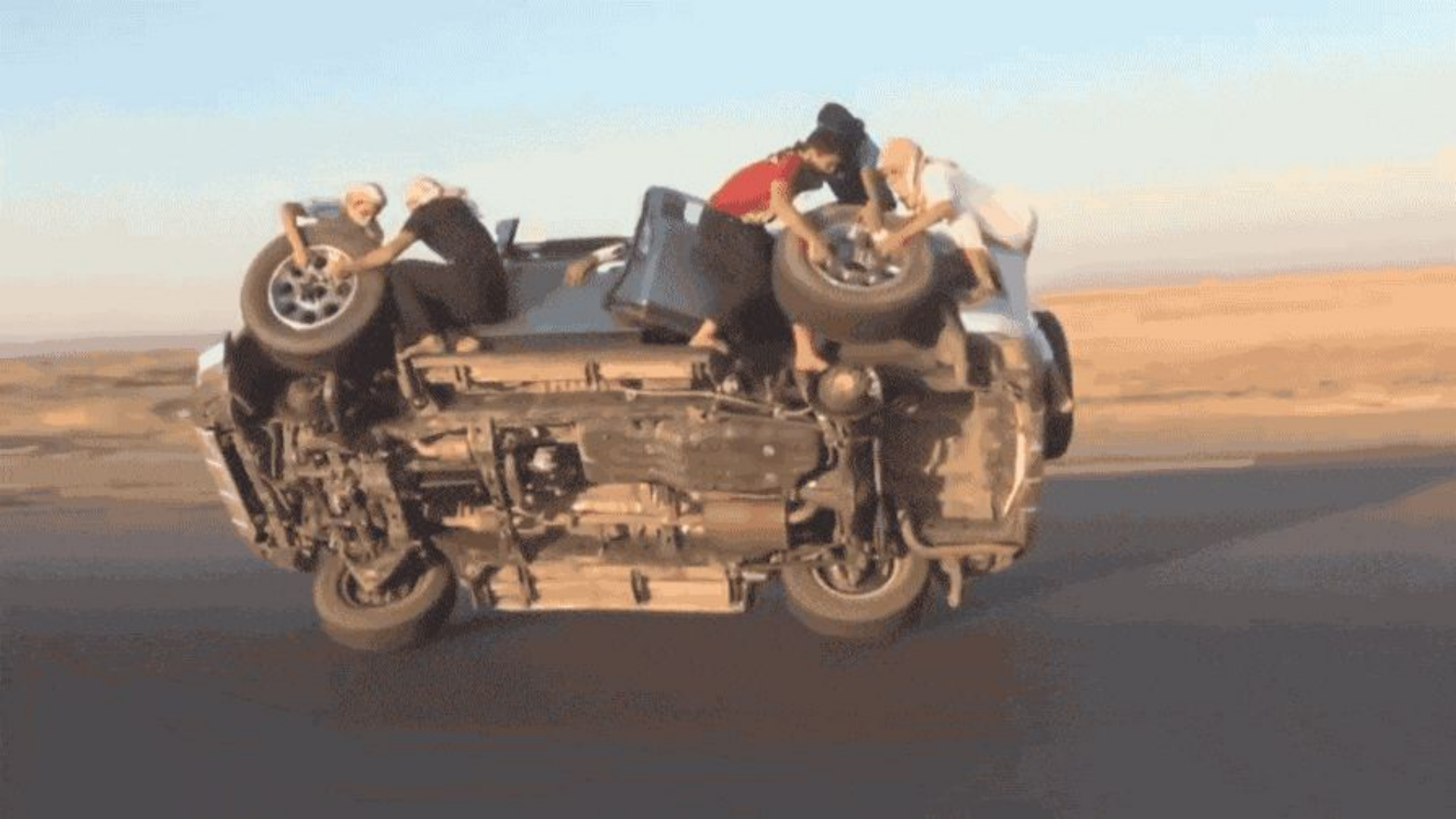


Things you'll learn

- Basic gen AI mus techniques (traditional + DL)
- Design gen mus systems from scratch
- Implement (gen mus) papers
- Use cloud services to run AI models
- Code / learn fast
- Solve problems
- Write clean code

Teaching approach

- Theory + practice
- Learn by doing
- Proactive + independent learning



Classes

- Theory
 - Genetic Algorithms
 - Markov Chains
 - RNN/LSTM
 - Transformer
- Practice
 - Assignments implementation
 - Paper implementation
 - Reverse engineering
 - Transformers hack session (cloud)



**TRADITIONAL
CLASSES**



**FLIPPED
CLASSES**

Valerio +
Anmol
in this
course



You
in this
course



Before theory classes...

- Watch videos
- Learn theory
- Code along with tutorials
- Do quiz

What happens if you
don't do pre-class
chores?



What we'll do in theory classes

- Recap
- Share experience
- Activities / reinforcement learning
- Paper / application

Come with your
laptop in class

Learning material

- [Generative Music AI](#)
- RNN/LSTM
 - [Recurrent Neural Networks Explained Easily](#)
 - [Long Short Term Memory \(LSTM\) Networks Explained Easily](#)
 - [Generating Melodies with LSTM Nets](#)

THE  SOUND OF AI

Tools



Quizzes

- 4 pre-class quizzes (1 per technique)
- Open 12 noon day before the class
- Close 12 noon day of the class

Assignments

- 4 coding assignments (1 per technique)
- Deadline: Jan 26th at midnight
- Group work:
 - 1-2 people
 - Ideally: 1 engineer + 1 musician
 - Stay the same for 5 assignments

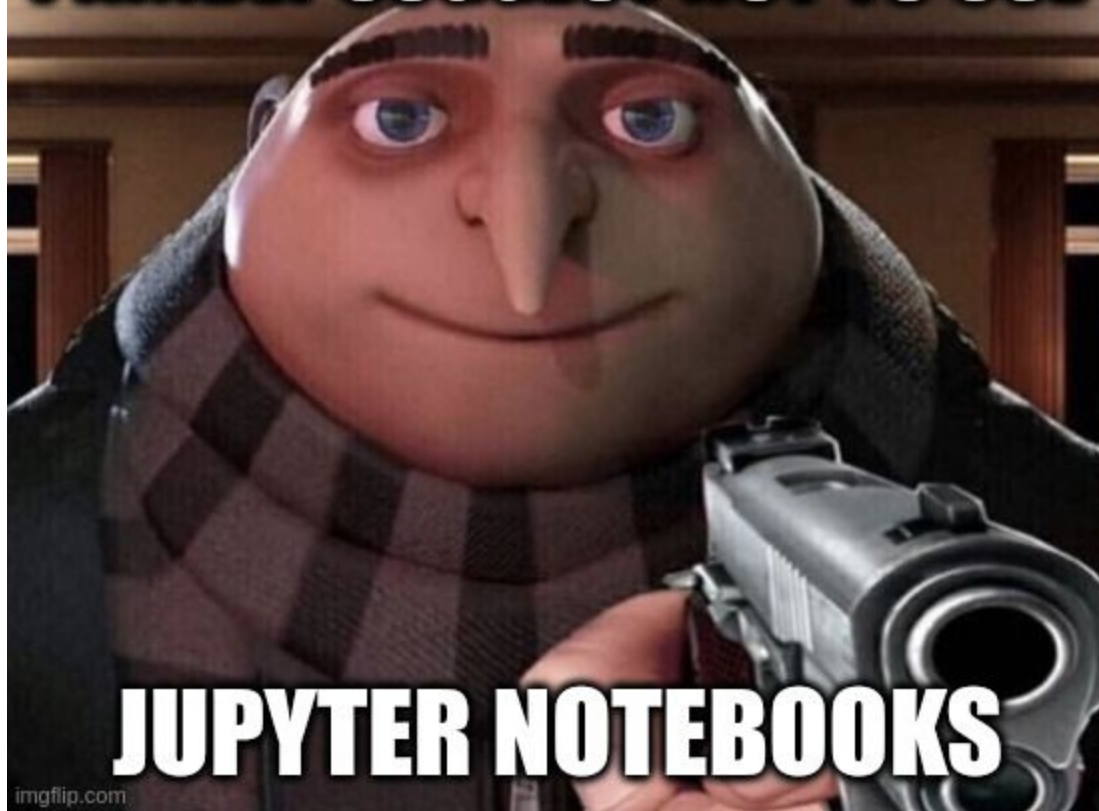
Paper implementation (you can already start!)

- Implement [Liquiprism: Generating Polyrhythms With Cellular Automata](#)
- Deadline: Jan 27th at midnight
- Group work:
 - 1-2 people
 - Ideally: 1 engineer + 1 musician
 - Stay the same for 5 assignments

Assignments: Deliverables

- Use [dedicated Github Classroom](#)
- Include *requirements.txt* to install package

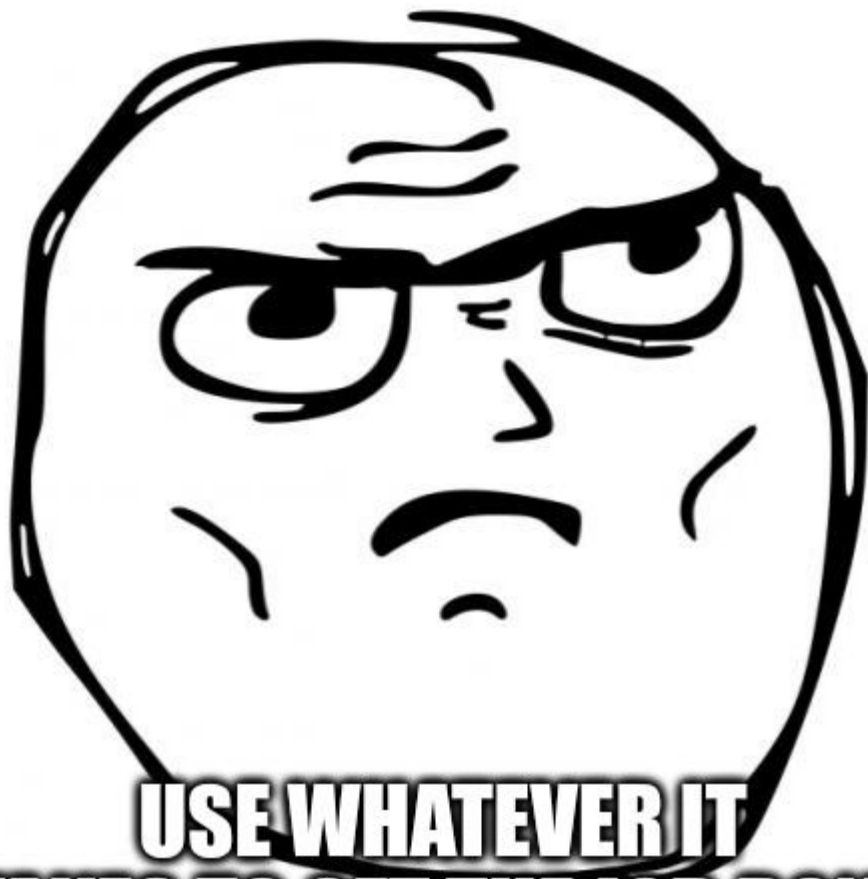
I KINDLY SUGGEST NOT TO USE



JUPYTER NOTEBOOKS

Final project

- Either for Part 1 or Part 2
- Part 1
 - Symbolic generative music system
 - Generates music in semi-realtime, sonified through a DAW
- 1 to 3 people



**USE WHATEVER IT
TAKES TO GET THE JOB DONE**

Course evaluation

- Part 1: 30%
- Part 2: 30%
- Final project: 40%

Part 1 evaluation

- Pre-class quizzes: 20%
- 4 code assignments + 1 paper implementation: 80%
 - Contribute equally
 - Pass / fail

Communication

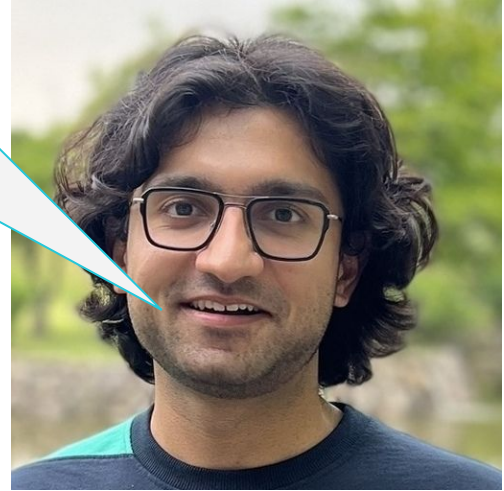
- #smc24-musicgen on MTG Slack
- DM @Valerio Velardo, @Anmol Mishra on MTG slack

You can book 20' sessions
with me on [Calendly](#).
Individuals or groups.



Valerio

Yo, you can book office hours also with me! Send me a DM on the MTG Slack.



Anmol

3. Part 2 (Lonce)

4. Activities

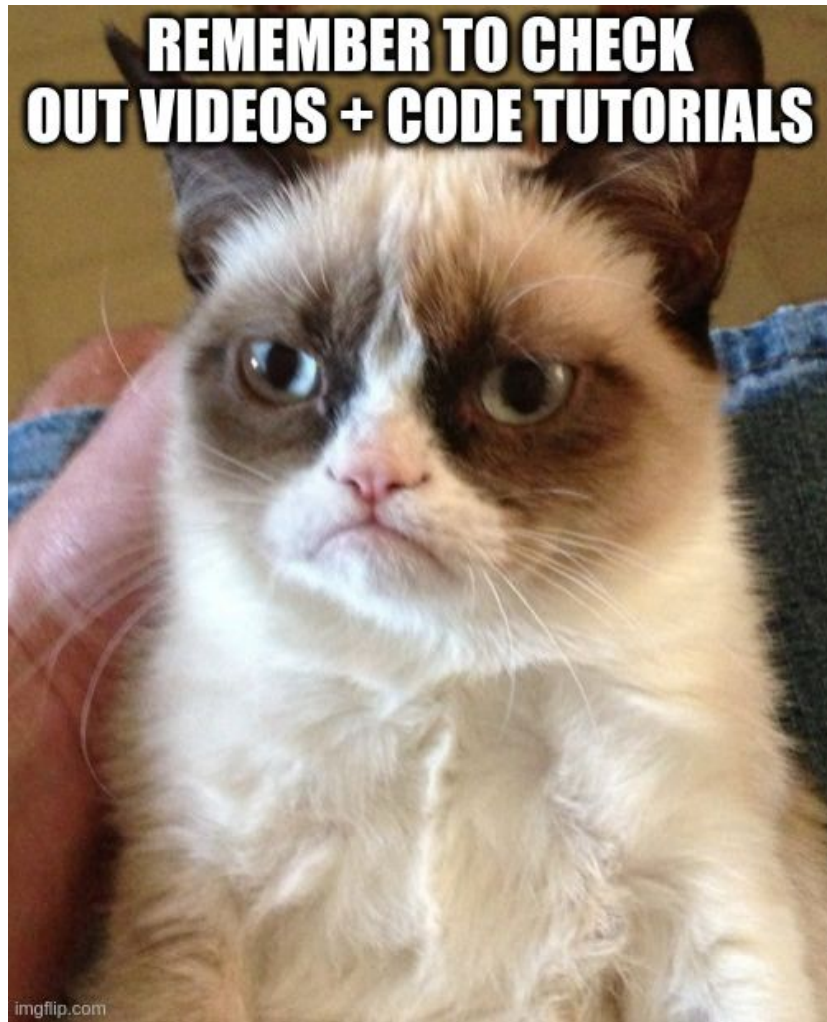
Audio gen vs symbolic gen (15')

1. Re-arrange class in 2 groups (audio fans vs symbolic fans)
2. Come up with reasons why your option is best and the other is bad
3. Debate with the other group

Ask Me Anything (10')

- Videos
- Job
- Industry
- Applications
- Personal experience
- Research
- Techniques
- Opinions
- ...

**REMEMBER TO CHECK
OUT VIDEOS + CODE TUTORIALS**



BRACE YOURSELF



GENERATIVE MUSIC IS COMING