



Computational creativity for music and the arts

MUSIC 30

Instructor Info —



Carmine-Emanuele Cella



By appointment only



Center for New Music and Audio
Technologies (CNMAT)



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Course Info —



Prereq: None



CNMAT (McEnerney Hall)

Lab Info —



CNMAT (McEnerney Hall) - Lap-
top and headphones required

Overview

The advancements in machine learning, especially the recent breakthrough of artificial neural networks, promoted novel art practices in which computers play a fundamental role and fostered research in the field of computational creativity. Alongside other arts, music has also benefited from the development of machine learning and artificial intelligence for tasks ranging from music generation to music analysis and composition.

Music 30 (*Computational creativity for music and the arts*) aims at exploring the potential that computers have to support, enhance and challenge music creation. The course is divided into three modules. The first module introduces the essential mathematical and machine learning tools and gives a general introduction to sound. The second module shows real applications of creative computing for music. The third module focuses on the connection between the society and computational creativity at large. The classes are supported by labs based on state-of-the-art computational tools.

Learning Objectives

- Understand the differences between human and computational creativity
- Learn to use and manipulate state-of-the-art tools for music creation
- Learn to critically evaluate computational artefacts
- Learn to review a paper and provide helpful criticism to your peers' work
- Understand the impact of creative computing on our society

Materials

Required Texts

("BEN") D. Benson, *Music: a mathematical offering*, freely available on author's web page, 2007.

("BUR") A. Burkov, *The Hundred-page machine learning book*, available at a very affordable price on <https://leanpub.com/theMLbook> (link to external site), 2019.

("STR") G. Strang, *Linear algebra and learning from data*, Wellesley Cambridge Press, 2019.

Recommended Texts

C. E. Cella, *Creative computing for music and sound*, MIT Press, in preparation.

A. Géron, *Hands-on machine learning with Scikit-Learn & TensorFlow*, O'Reilly, 2017.

E. A. Lee, *Plato and the nerd. The creative partnership of humans and technology*, MIT Press, 2017.

Other

Music 30 will use Python/Anaconda (<https://www.anaconda.com>, link to external site) and Cycling'74 Max (<http://cycling74.com/>, link to external site) programming environments extensively during the labs. The free audio editor Ocenaudio (<https://www.ocenaudio.com>, link to external site) will also be used during classes. Students must have access to a laptop computer with these software packages installed and must have headphones. Students may choose to purchase Max, or alternatively there are student authorization options. Any required journal/conference articles and all the source code for the labs will be provided on *bCourses*. Relevant drafts of *Creative computing for music and sound* will also be distributed during the labs. Lecture notes will be provided for each class.

ENROLL NOW!!!

For more info: music.berkeley.edu