



UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI INFORMATICA

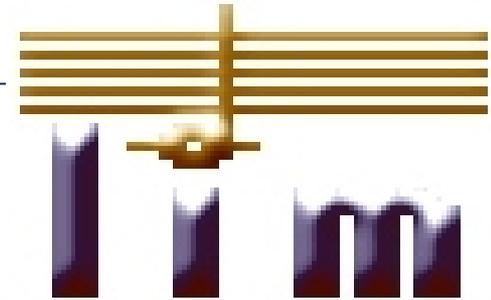
Bootstrap day 2021-2022

*Presentazione CdL
Informatica Musicale*

Federico Avanzini



Un po' di storia



- 1985: fondazione del LIM
- 2002: CdL “Scienze e Tecnologie della comunicazione musicale”
- 2010: CdL “Informatica Musicale”
- 2018: Il “nuovo” LIM

<https://www.lim.di.unimi.it>





Il nuovo LIM

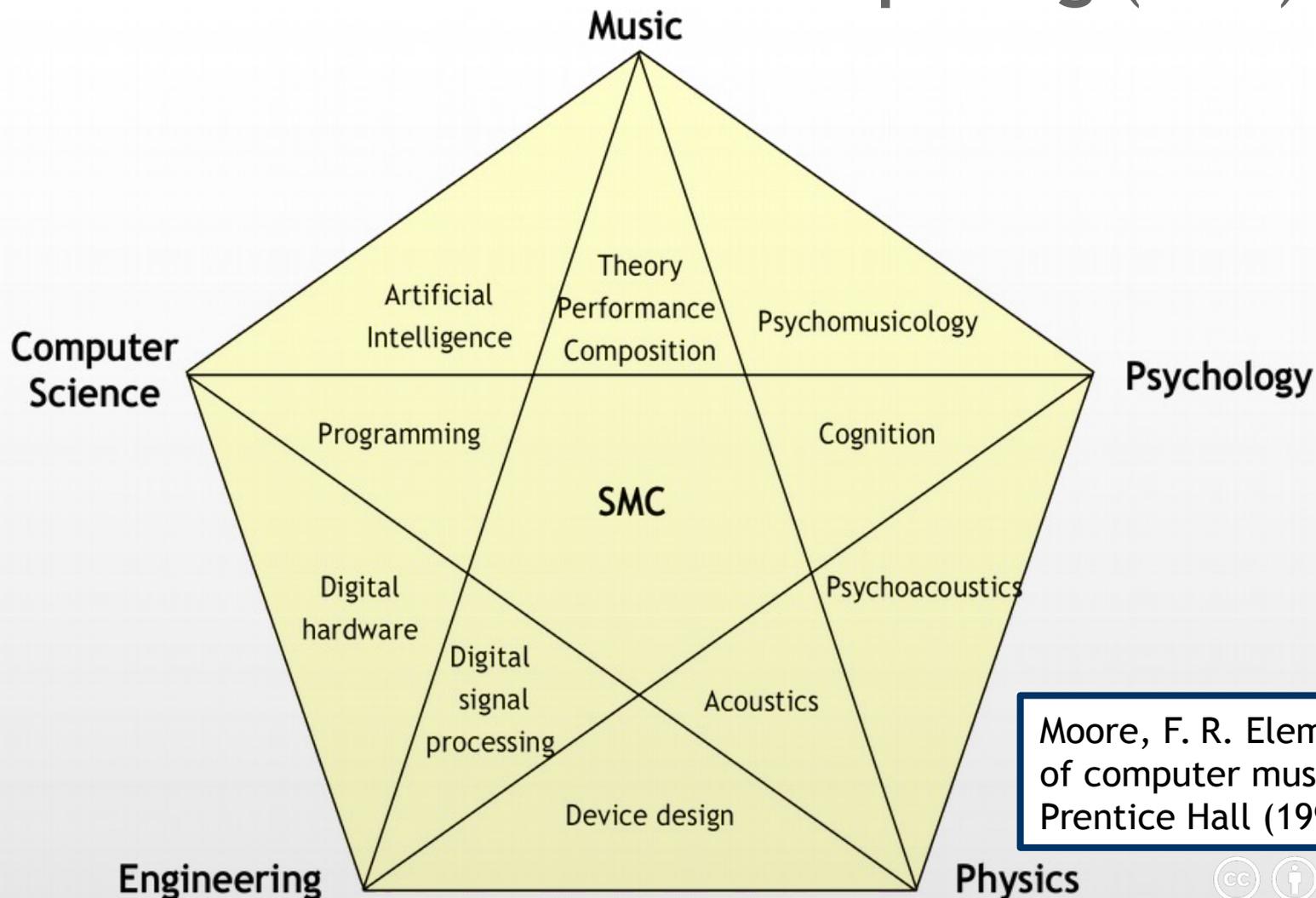


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i III Informatica Musicale

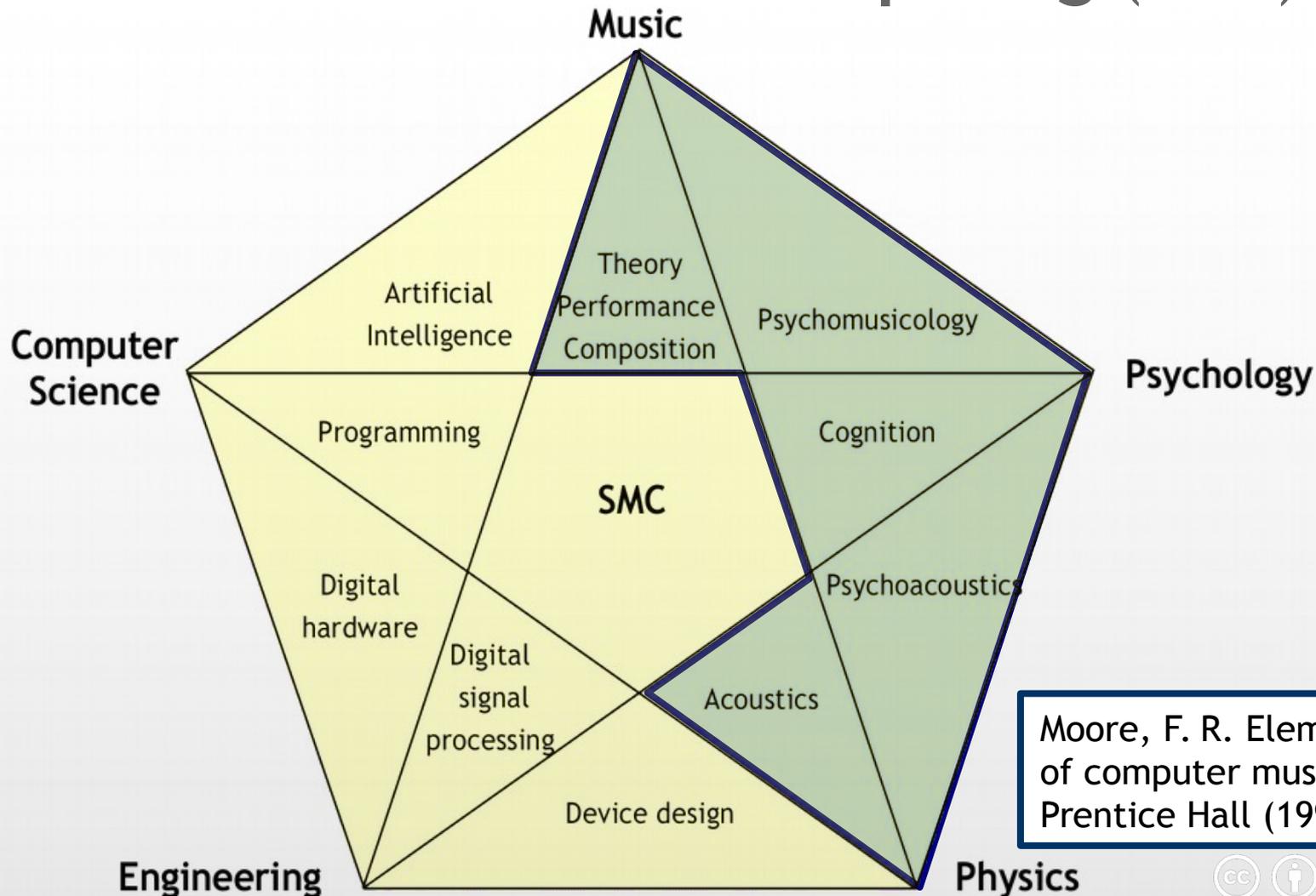
- AKA Sound and Music Computing (SMC)



Moore, F. R. Elements of computer music. Prentice Hall (1990)

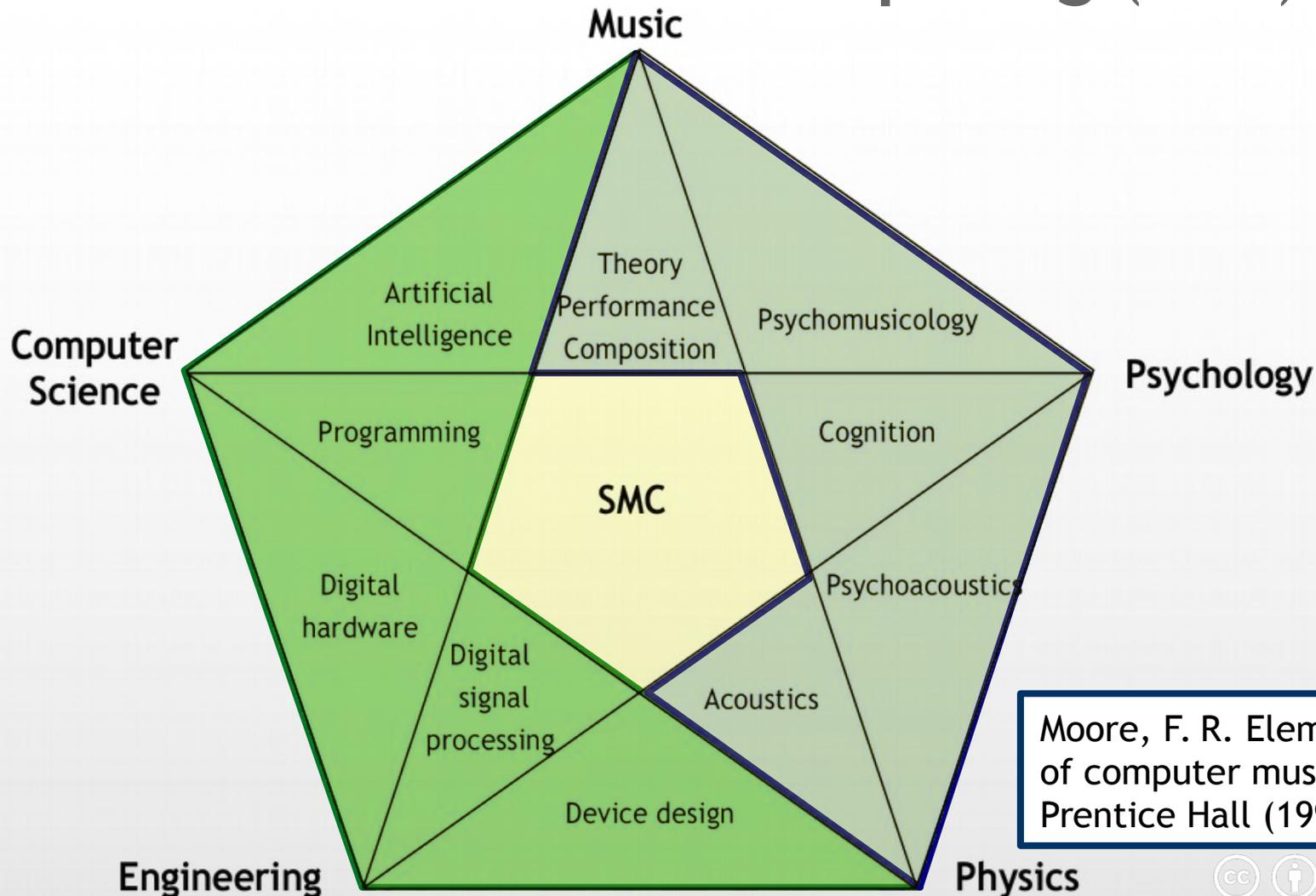
i III Informatica Musicale

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i III Informatica Musicale

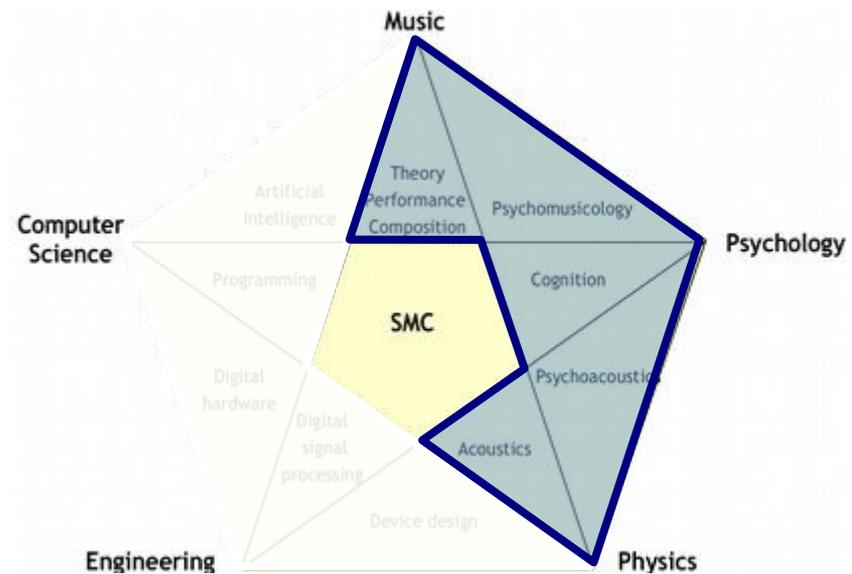
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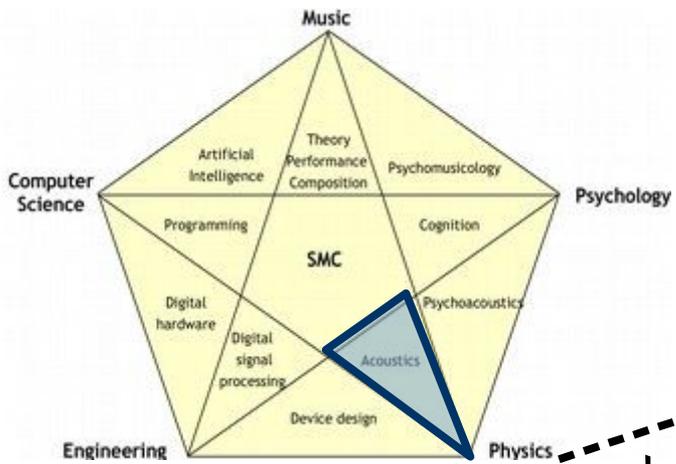


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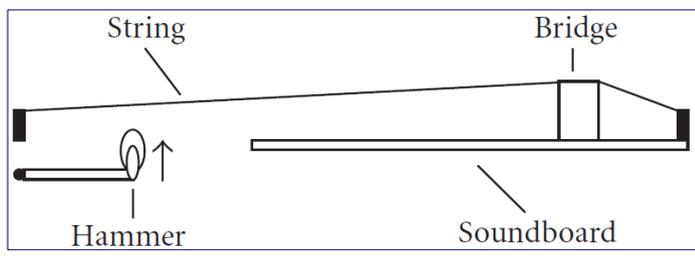
SMc

Sound and Music ...

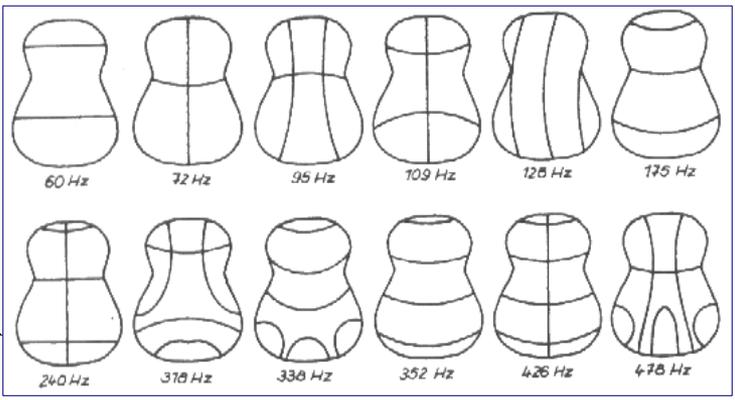




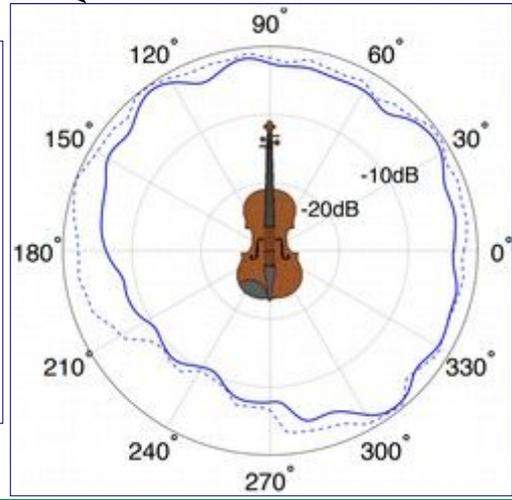
Produzione del suono



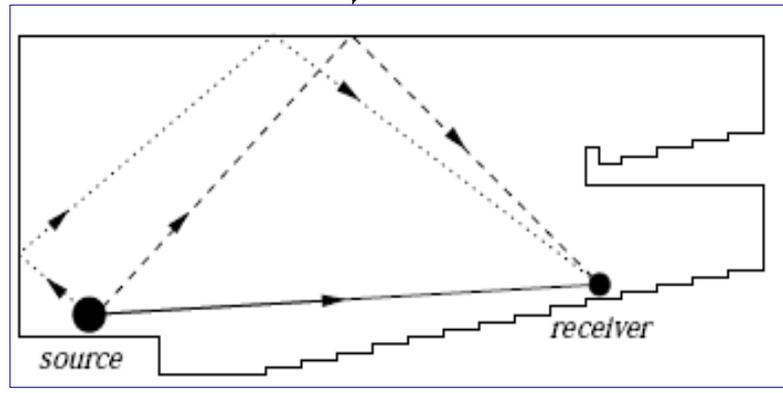
Vibrazioni e risonanze

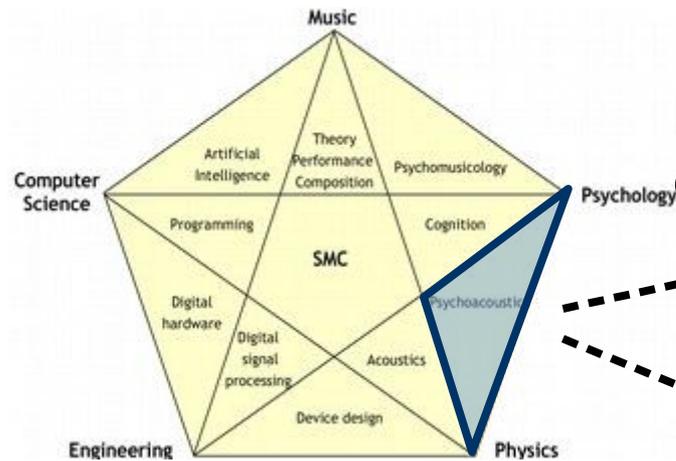


Radiazione

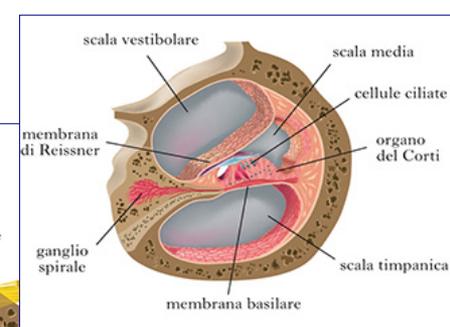
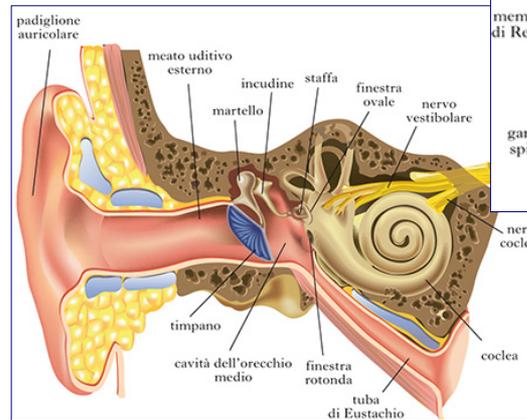


Trasmissione del suono e ambienti





Fisiologia dell'orecchio



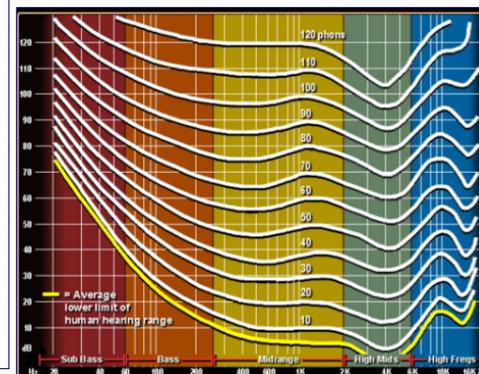
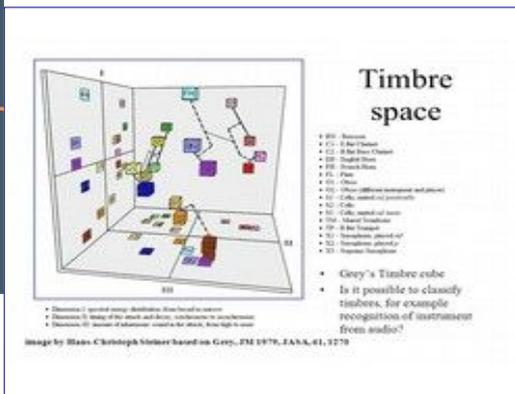
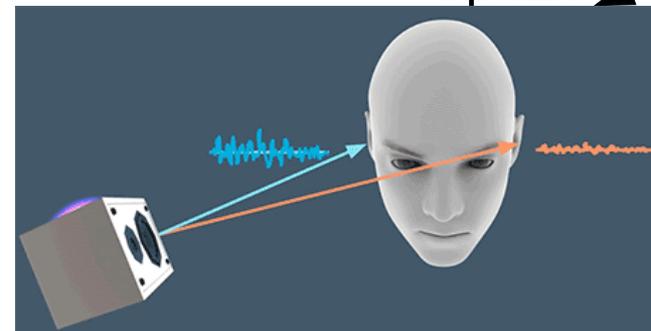
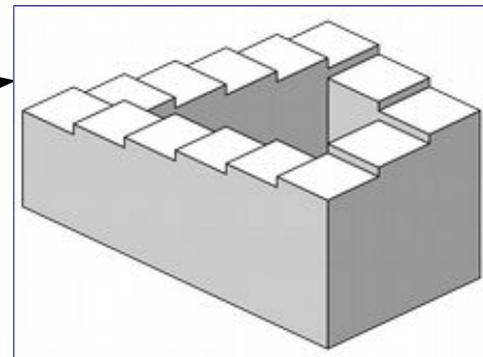
Percezione di attributi del suono

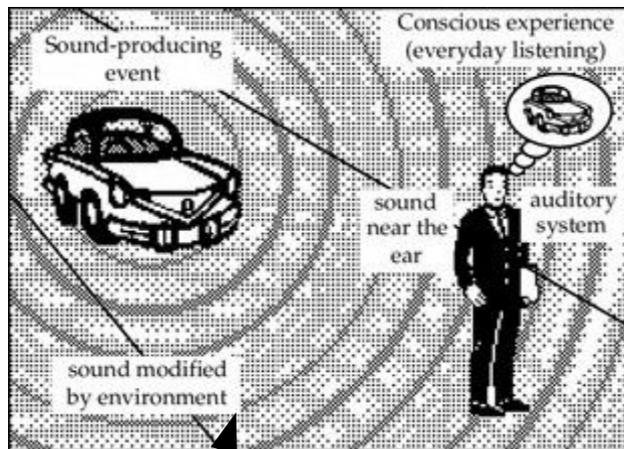
Spazio

Timbro

Altezza

Intensità

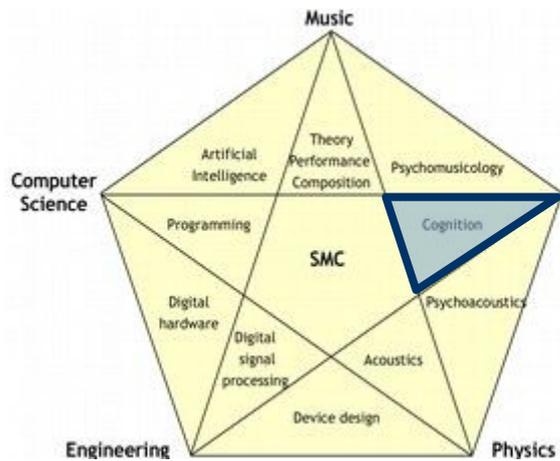




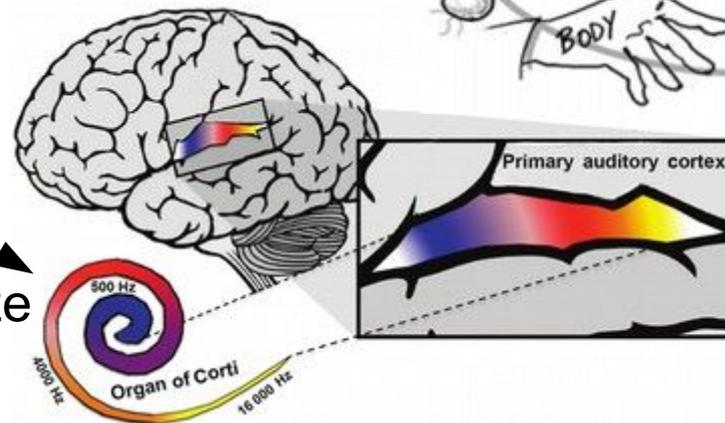
Acustica
ecologica

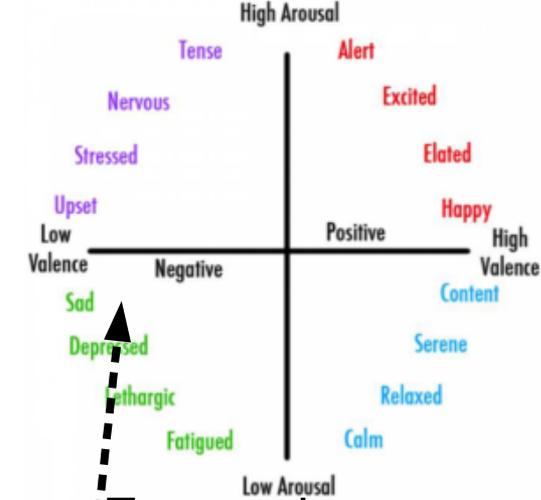
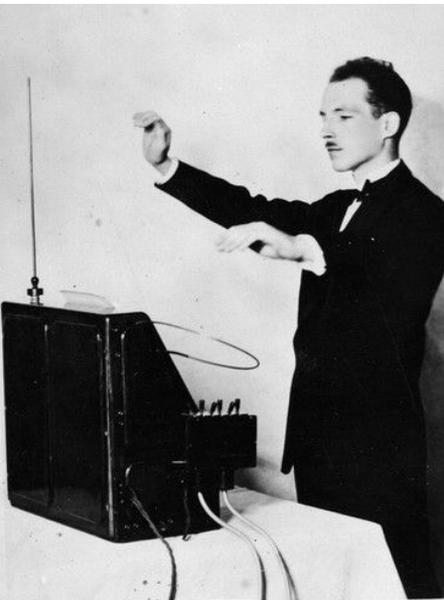
Analisi della scena uditiva

Cognizione "embodied"



Neuroscienze
uditive





Goldberg Variations

BWV 988
(PART I)

J.S. Bach (1685-1750)



Espressione ed emozioni

Nuovi strumenti

Teoria, armonia, notazione, ...

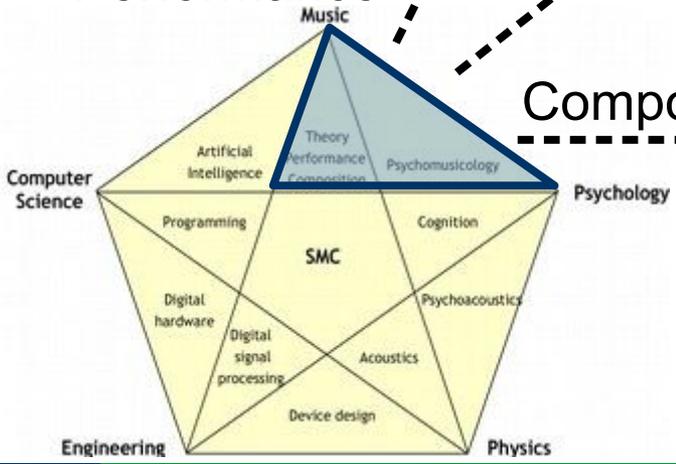
Musica concreta



Performance

Composizione

Musica formalizzata



MORSIMA AMORSIMA
MORSIMA - AMORSIMA
Dedicato à Manos HADZIDAKIS
Χαρίζονται στὸν Μάνο ΧΑΤΖΙΔΑΚΗ
(5T/4-1, 03 03 62)

αδρ. : arco sul pont.
an. : arco partit. notes.
pnl. : frappe sul legno

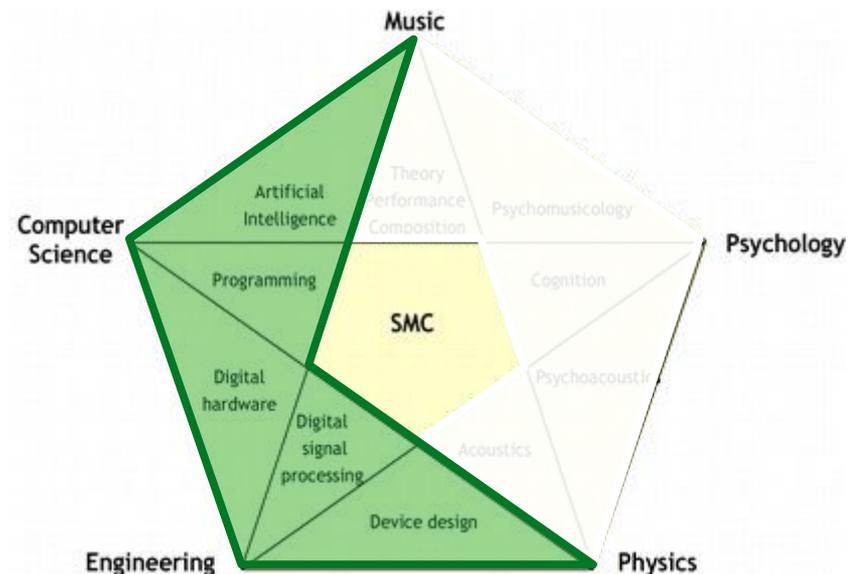
fas de vibrato

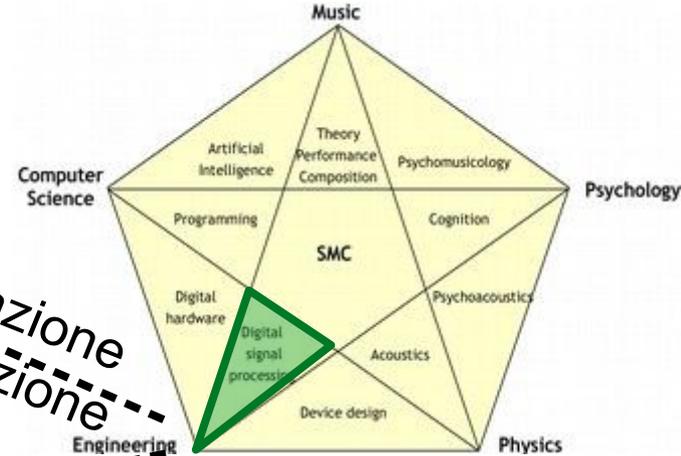
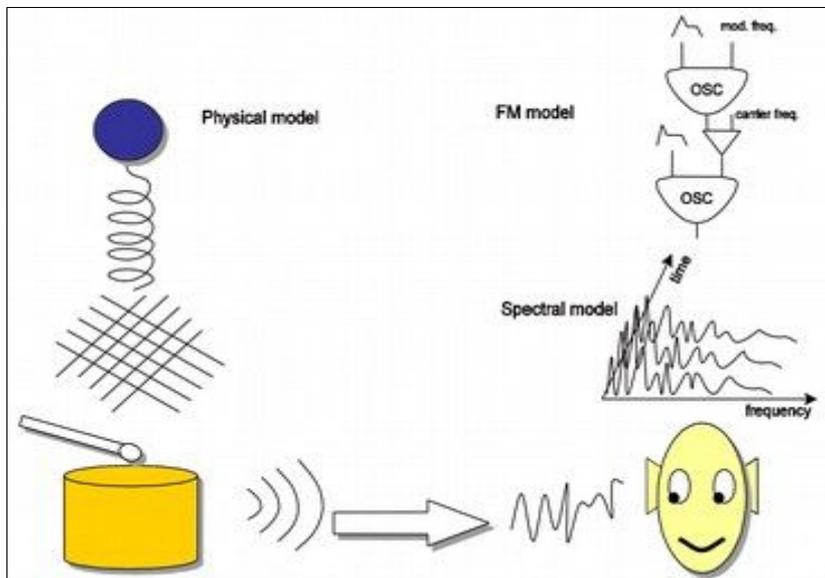
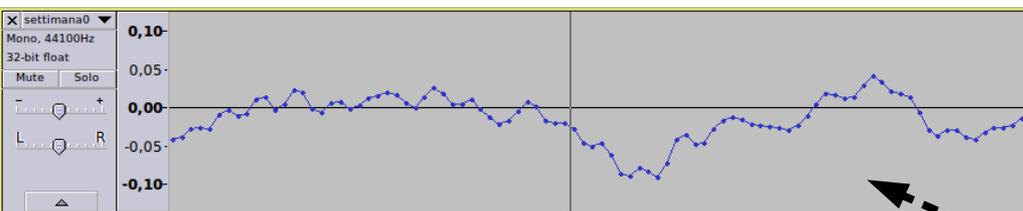
Tannis Xenakis

durée : 12' environ

smC

... Computing



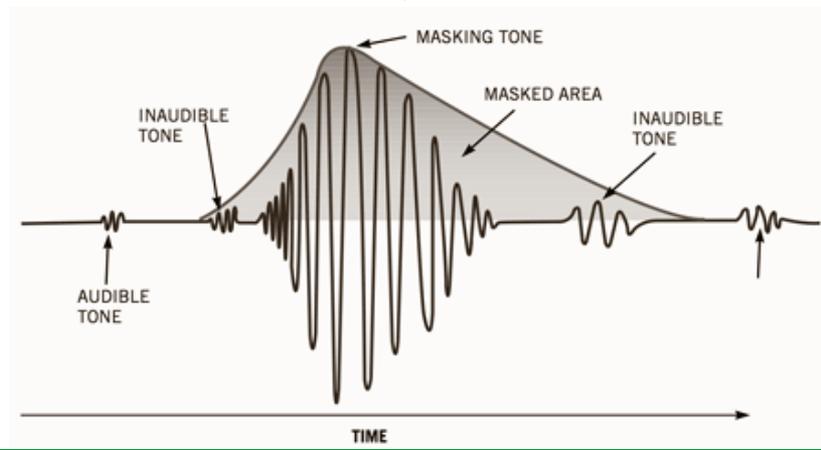


Digitalizzazione ed elaborazione

Sintesi ed effetti

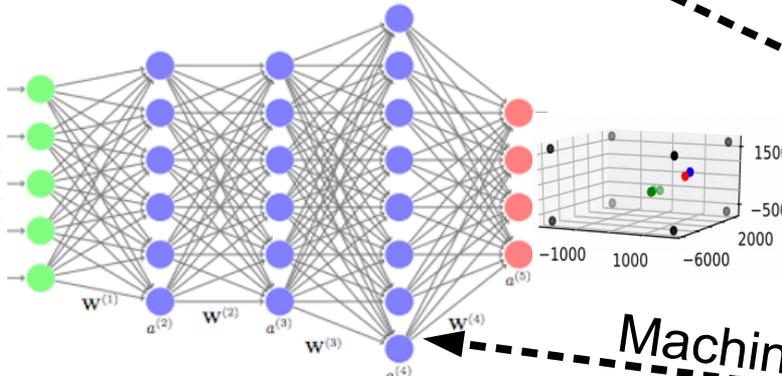
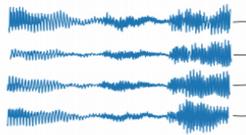
Audio 3D

Modelli uditivi e codifica percettiva





Brani



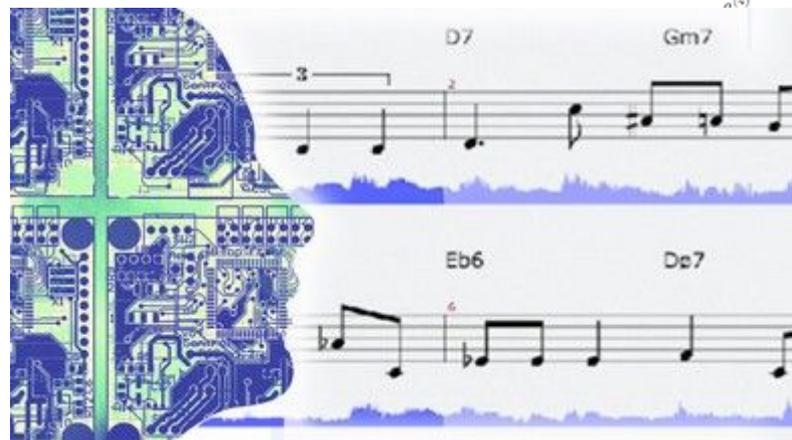
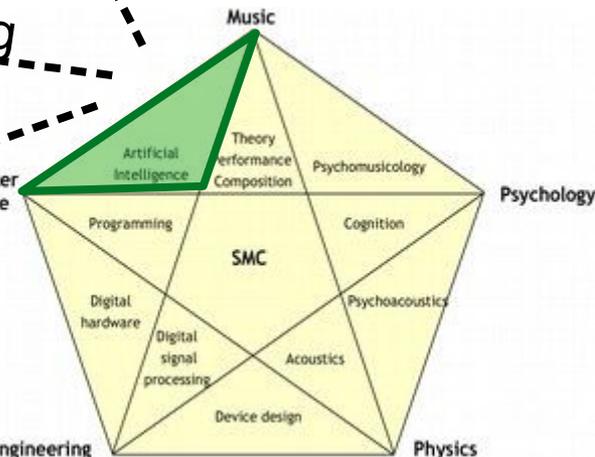
Accordi

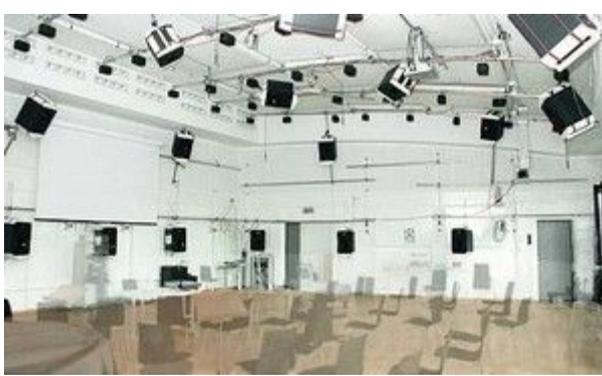
Ecc.

Music
Information
retrieval

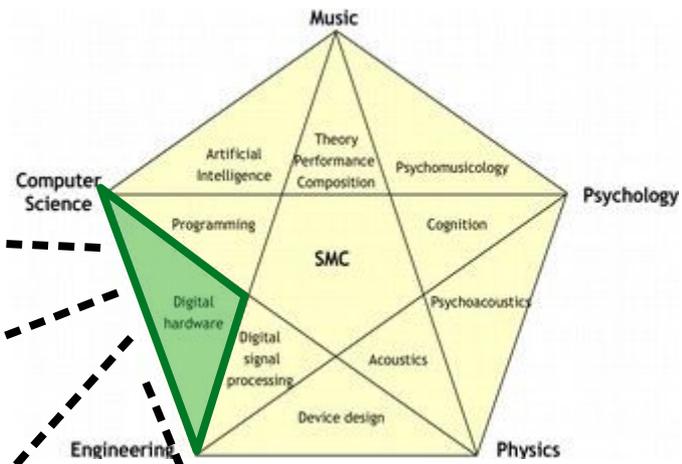
Machine hearing

Generazione artificiale
di suono e musica





Riproduzione



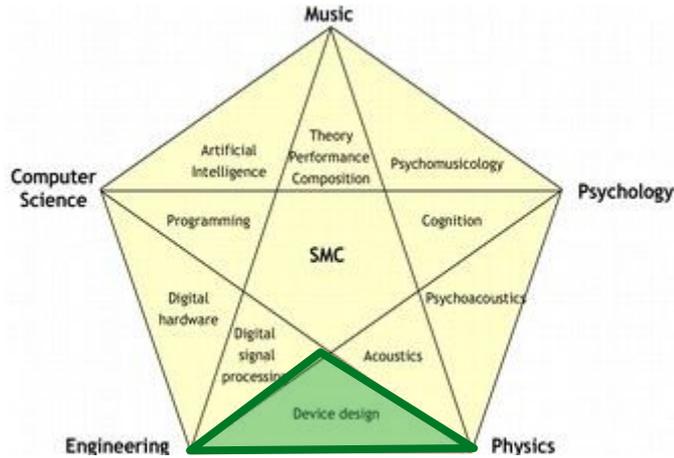
Cattura

Sensori e attuatori



Conversione





Human-Computer Interaction

Strumenti digitali e aumentati

Sonic interaction design

Realtà virtuale e aumentata

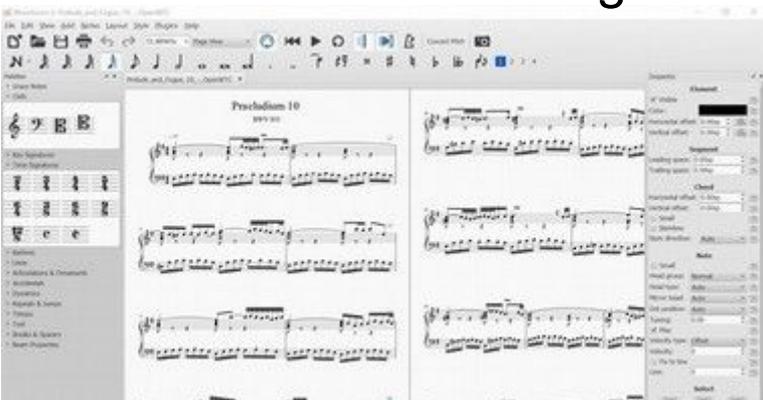




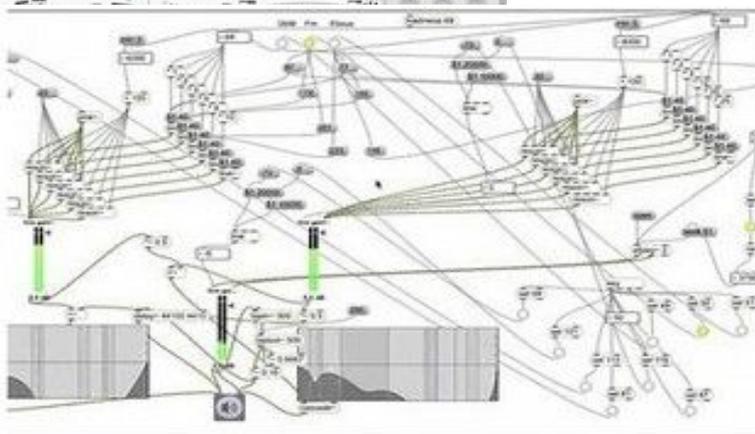
Plugin audio



Digital Audio Workstation (DAW)



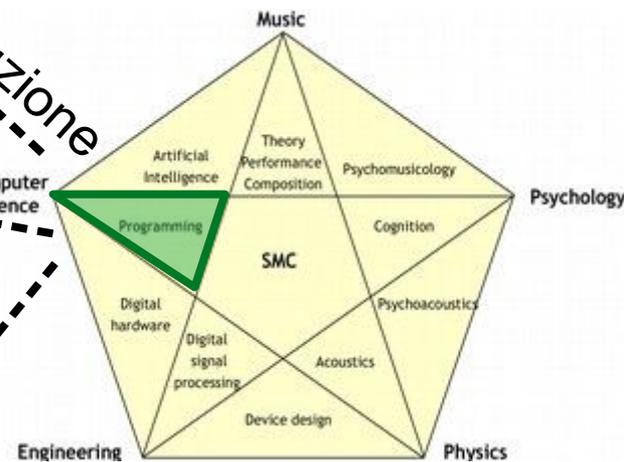
Notazione



Composizione

Produzione

Computer Science



Struttura (anno.semestre)

Lingua inglese livello B1 (I.1)

Matematica del continuo (I.1)

Programmazione (I.1)

Semiotica della musica (I.1)

Acustica (I.2)

Architettura degli elaboratori (I.2)

Elementi di economia dei beni musicali (I.2)

Modelli della percezione musicale (I.2)

Algoritmi e strutture dati (II.1)

Basi di dati (II.1)

Elaborazione dei segnali (II.1)

Informatica applicata al suono (II.1)

Sistemi operativi (II.1)

Informatica applicata alla musica (II.2)

Statistica e analisi dei dati (II.2)

Elementi di diritto dell'informazione musicale (III.1)

Metodologie e tecnologie per l'editoria musicale (III.1)

Programmazione per il web (III.1)

Reti di calcolatori (III.1)

A scelta guidata (III)

A scelta libera (III)

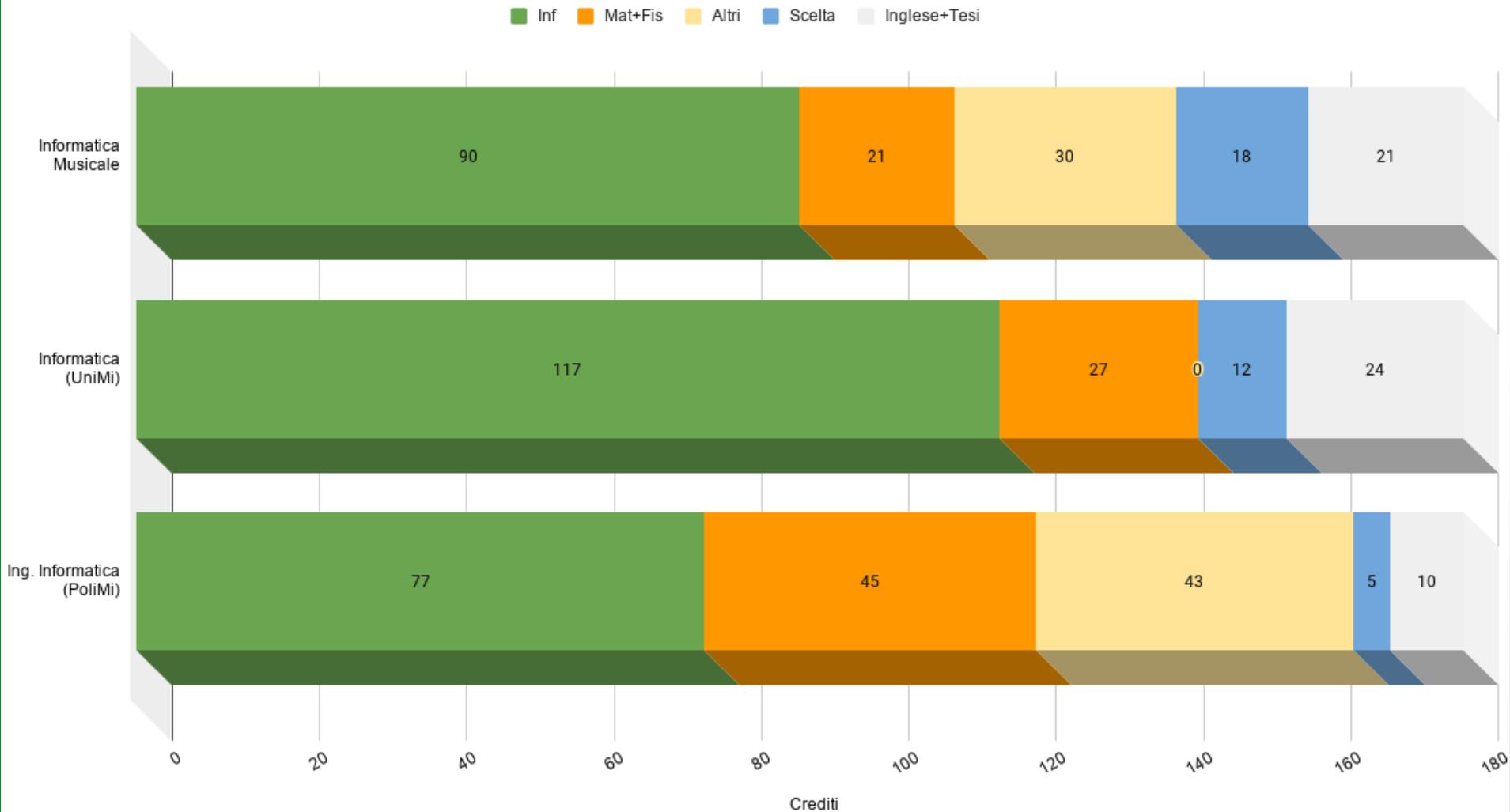
Tirocinio e prova finale

Area Informatica
Area matematica e fisica

Area informatico-musicale
Area musicale



Confronto con altri CdL



Attività complementari



Laboratorio di
Informatica
Musicale



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Steinberg e UniMi: una
sinergia per la didattica
delle nuove tecnologie
musicali



- Ciclo di seminari su Cubase (24 ore)
 - 3CFU in piano di studi + Certificazione Steinberg



- Tesi interne o in tirocinio esterno
- Laureati in Informatica Musicale
 - https://www.lim.di.unimi.it/people_former_students_ita.php
- Dati occupazione Almalaurea
 - <https://www.almalaurea.it/universita/indagini/laureati/occupazione>
- Corso di Laurea Magistrale in Informatica
 - Percorso in Informatica Musicale
- Dottorato in Informatica
 - Progetti di ricerca in Informatica Musicale



- Sito del CdL
 - <https://informaticamusicale.cdl.unimi.it>
 - Info generali, orari, programmi insegnamenti, piani di studio, tesi, messaggi agli studenti
- Siti degli insegnamenti
 - Su <https://ariel.unimi.it/>
 - Libri di testo, materiali aggiuntivi, slide, videolezioni, comunicazioni, ...
- Tutor di processo
 - <https://orientamento.di.unimi.it/index.php/studia-con-noi/tutor-di-processo>
 - Supporto a matricole



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