PAT 463/563 (Fall 2026)

Music & AI

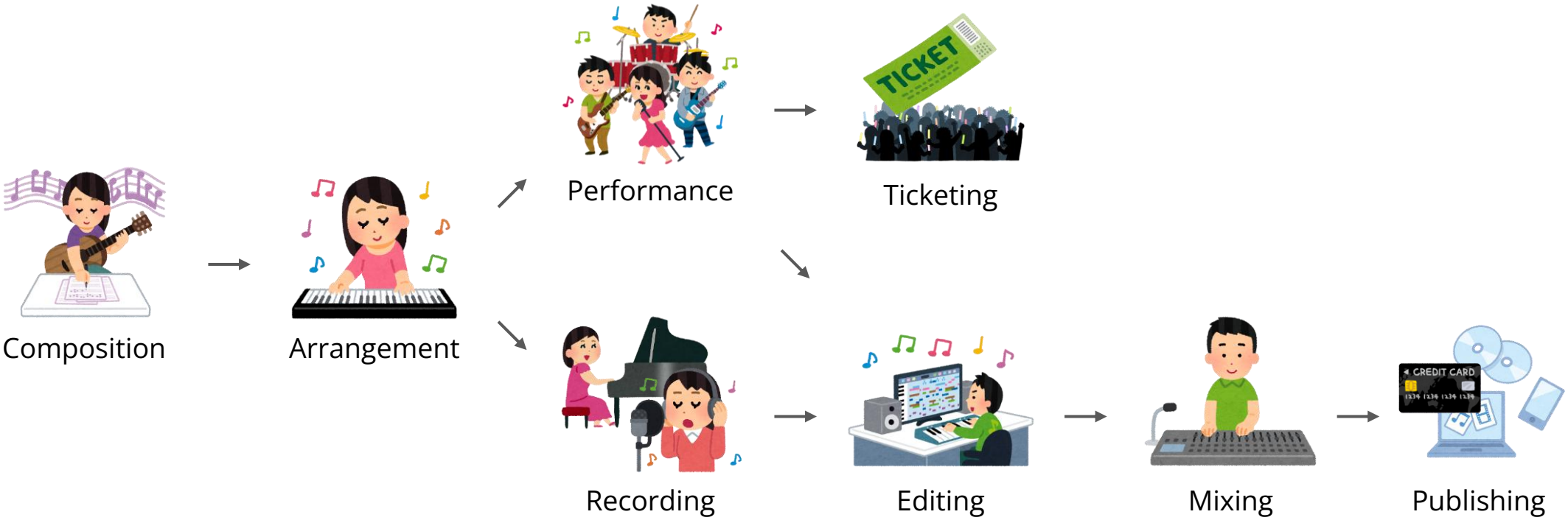
Lecture 3: AI & Music

Instructor: Hao-Wen (Herman) Dong

UNIVERSITY OF MICHIGAN

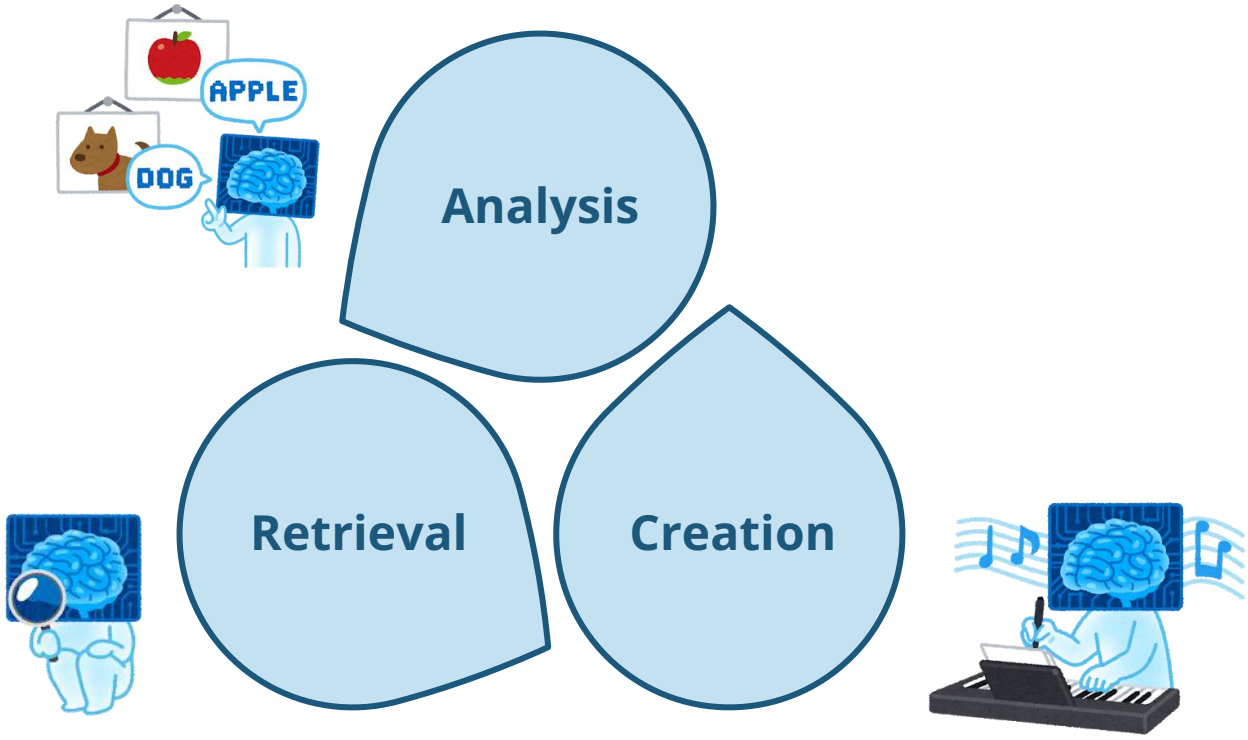
Music & AI

An Overly-Simplified Music Production Workflow



Music Information Research (MIR)

- "Intelligent ways to analyze, retrieve and create music" (Yang 2018)



Yang, "Music Information Research," SNHCC, TIGP, lecture notes, April 2018.

Use Cases of AI for Music & Audio

(Source: The Denver Post)

(Source: UploadVR)

(Source: Descript)

(Source: Daily Bruin)

(Source: Universitaetsmedizin)

Universitaetsmedizin, CC BY-SA 4.0, via Wikimedia Commons
uploadvr.com/iron-man-vr-breaks-free-from-cords-load-screens-on-quest-2/
descript.com/blog/article/what-is-the-best-audio-interface-for-recording-a-podcast
denverpost.com/2019/08/02/colorado-symphony-movie-scores-harry-potter-star-wars/
dailybruin.com/2023/08/04/theater-review-the-musical-les-misrables-offers-stellar-displays-and-impassioned-vocals

Music & Technology Co-evolves

Hildegard Dodel, Public domain, via Wikimedia Commons.
Taken at Hamamatsu Museum of Musical Instruments, August 2019.
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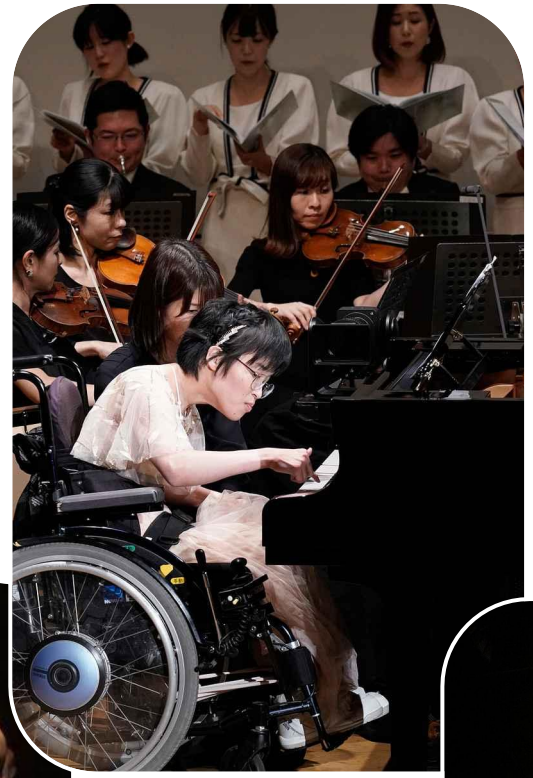
Music & AI Co-evolves

(Source: Yamaha)

(Source: Sankei Shimbun)



(Source: Robot Gizmos)

(Source: clairechoquette.com)

yamaha.com/en/news_release/2018/18013101/
sankei.com/article/20240113-CQCOSQHJWFIYPJJKZDCITRTRVI/
roboticgizmos.com/shimon-musical-robot-deep-learning/
clairechoquette.com/portfolio/dust-bowl

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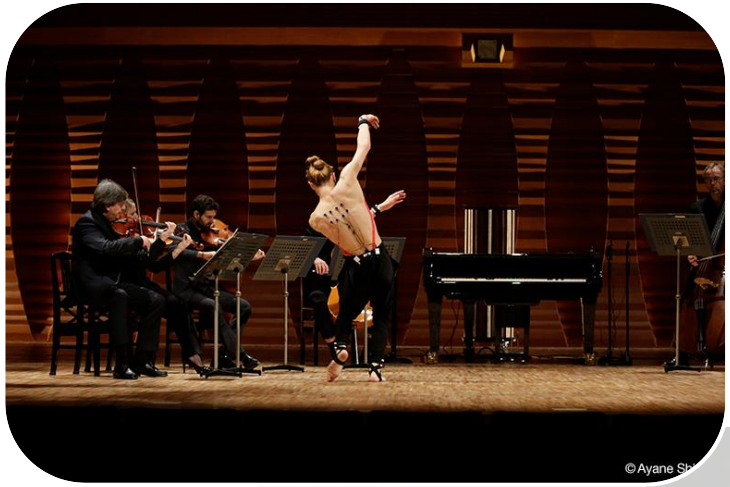

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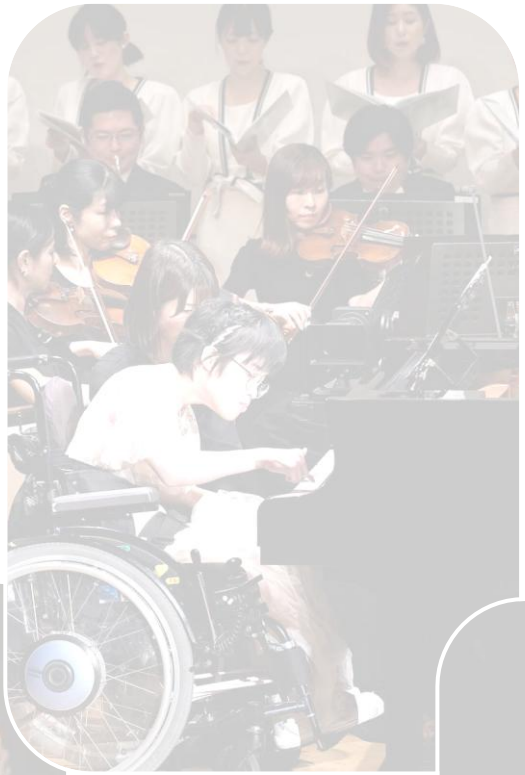

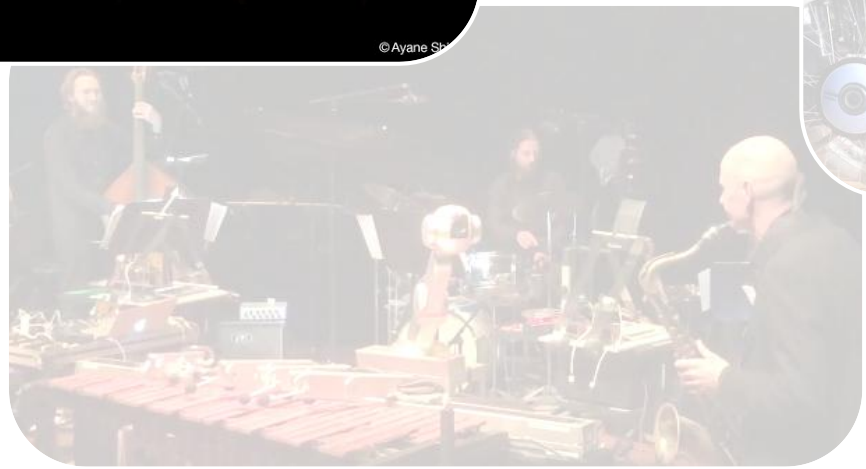

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AI Transforms a Dancer into a Pianist (2018)

(Source: Yamaha)

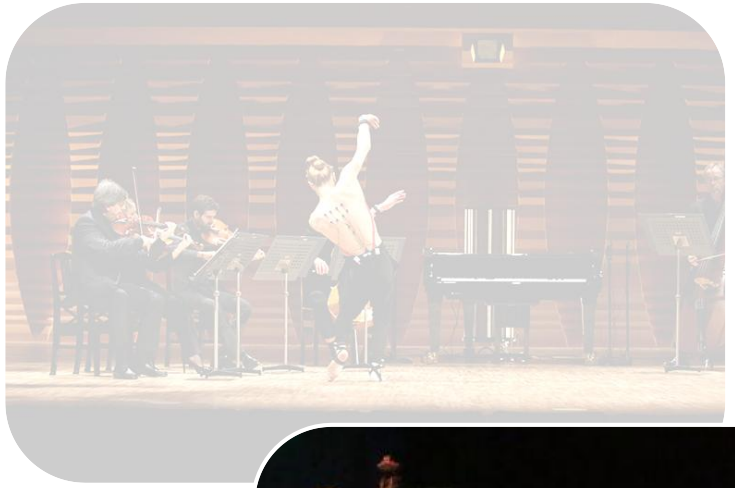
yamaha.com/en/news_release/2018/18013101/

AI Transforms a Dancer into a Pianist (2018)

youtu.be/21injmy1wsU

Music & AI Co-evolves

(Source: Yamaha)



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(Source: Robot Gizmos)

(Source: clairechoquette.com)

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Shimon with the Aarhus Jazz Orchestra (2021)

(Source: Robot Gizmos)

roboticgizmos.com/shimon-musical-robot-deep-learning/

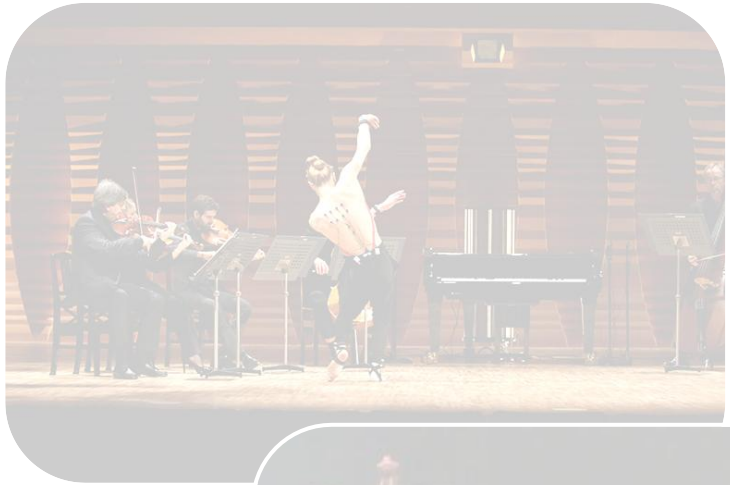
Shimon with the Aarhus Jazz Orchestra (2021)

youtu.be/ZpTV1-acSU8

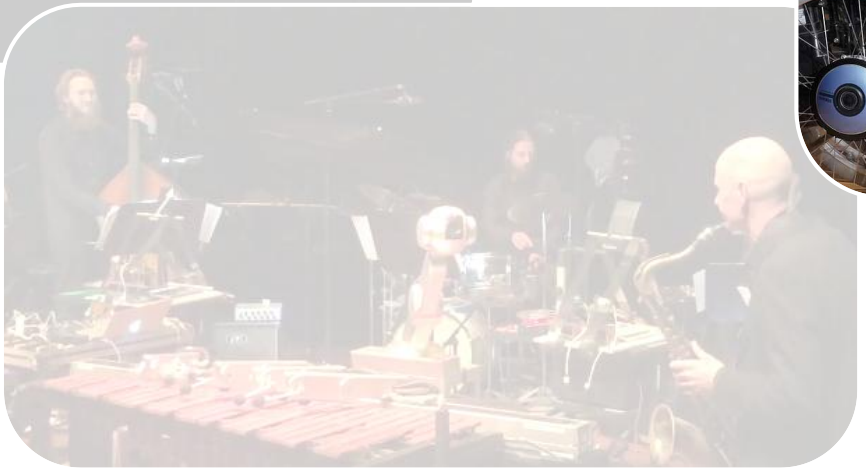
roboticgizmos.com/shimon-musical-robot-deep-learning/

Music & AI Co-evolves

(Source: Yamaha)



(Source: Sankei Shimbun)



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(Source: clairechoquette.com)

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roboticgizmos.com/shimon-musical-robot-deep-learning/
clairechoquette.com/portfolio/dust-bowl

The Ninth for Everyone (だれでも第九) (2023)

(Source: Sankei Shimbun)

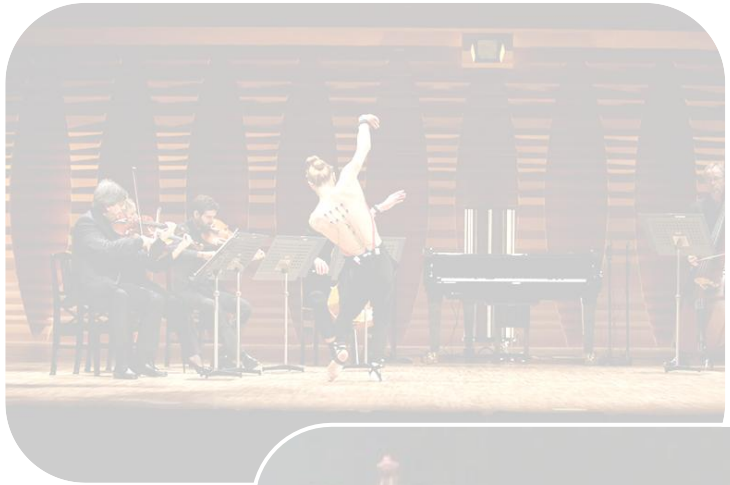
sankei.com/article/20240113-CQCOSQHJWFIYPJJKZDCITRTRVI/
yamaha.com/en/stories/culture/the-9th/

だれでも
第九

第4楽章

Music & AI Co-evolves

(Source: Yamaha)



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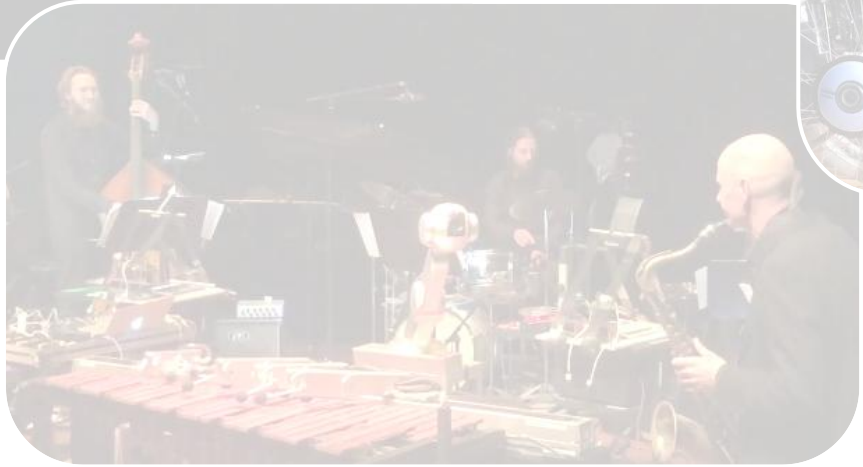

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(Source: clairechoquette.com)

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roboticgizmos.com/shimon-musical-robot-deep-learning/
clairechoquette.com/portfolio/dust-bowl

Dust Bowl by Verdigris Ensemble (2024)

(Source: clairechoquette.com)

clairechoquette.com/portfolio/dust-bowl
facebook.com/watch/?v=284978893494618

Bringing Historical Images to Life using AI

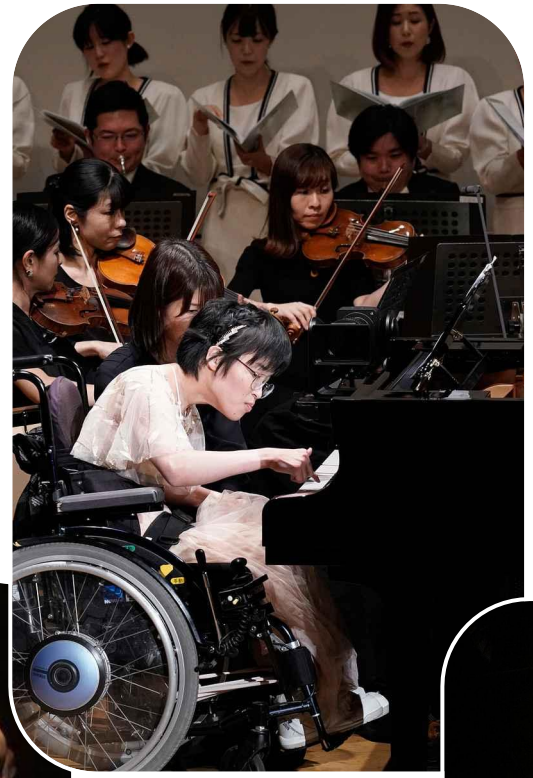
youtu.be/_E5Sf3O4-MY

nbcdfw.com/entertainment/the-scene/how-verdigris-ensemble-is-using-ai-to-create-a-new-concert-experience/3366031/

Music & AI Co-evolves

(Source: Yamaha)

(Source: Sankei Shimbun)



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(Source: clairechoquette.com)

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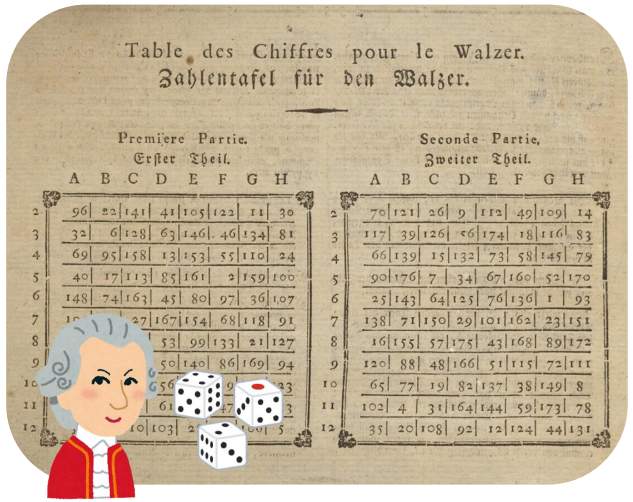
roboticgizmos.com/shimon-musical-robot-deep-learning/
clairechoquette.com/portfolio/dust-bowl

AI for Music in the Early Days

The Early Days

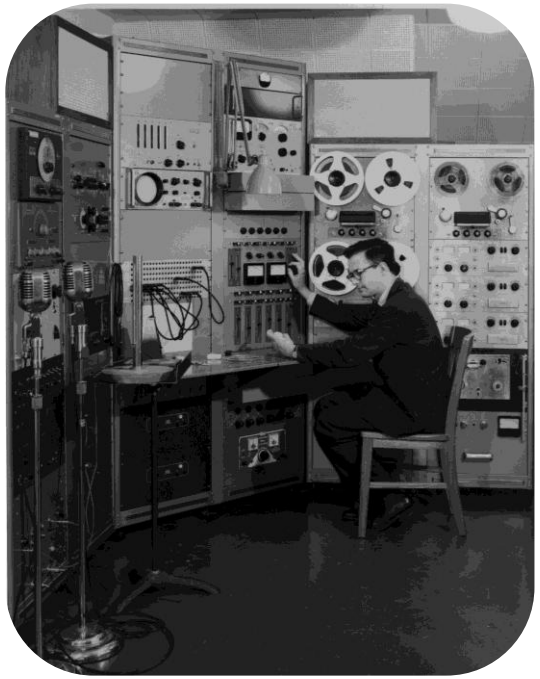
Musical Dice Game (1792)



(Source: gbrachetta)

gbrachetta.github.io/Musical-Dice/

ILLIAC Suite (1957)



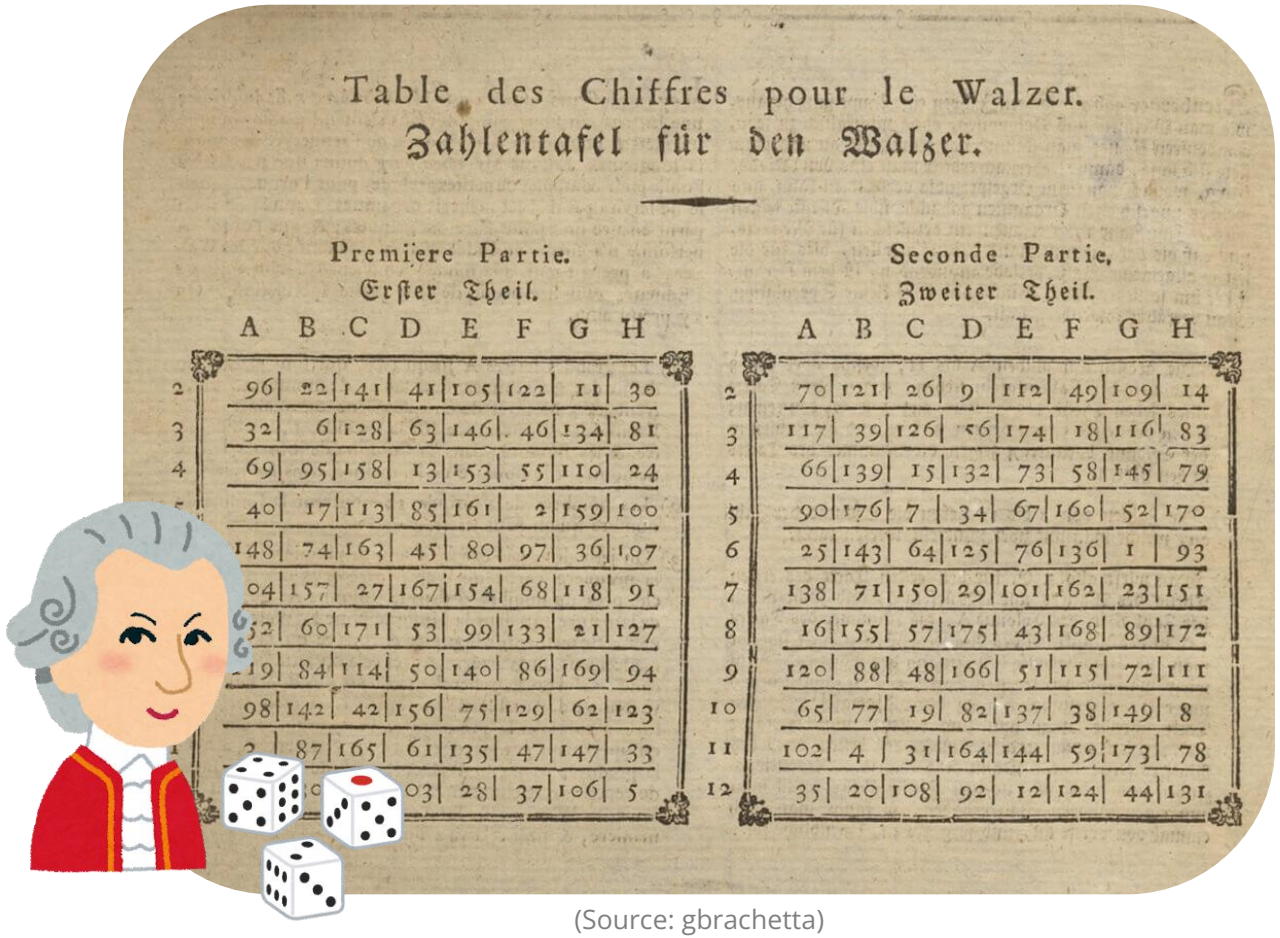
(Source: Illinois Distributed Museum)

Emily Howell (2003)

(Source: The Guardian)

gbrachetta.github.io/Musical-Dice/
distributedmuseum.illinois.edu/exhibit/illiac-suite/
theguardian.com/technology/2010/jul/11/david-cope-computer-composer

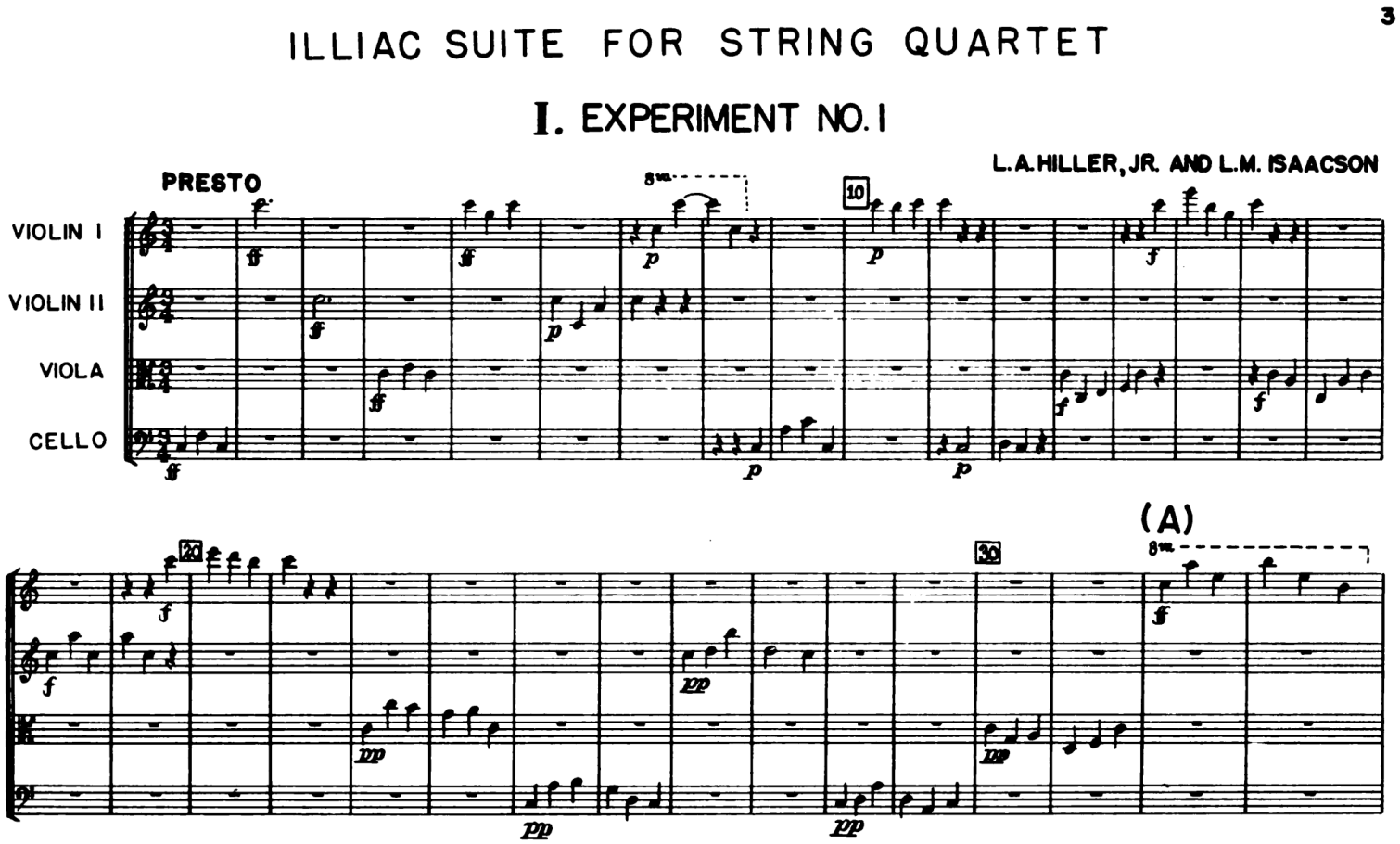
Musical Dice Game (attributed to Mozart, 1792)

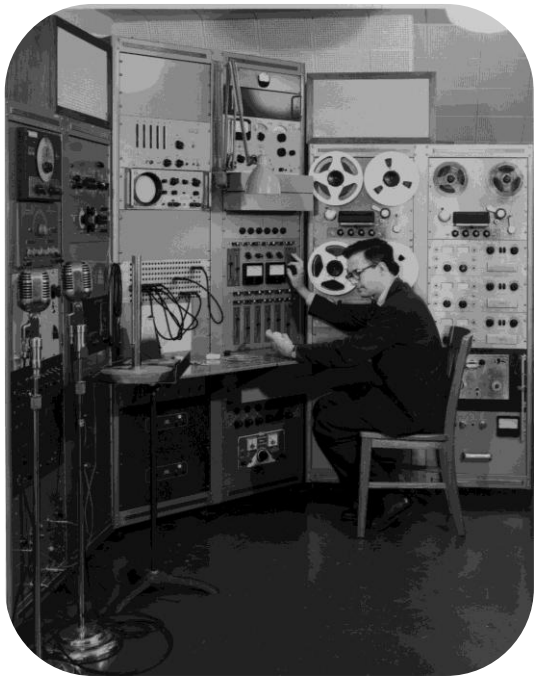


(Source: gbrachetta)

gbrachetta.github.io/Musical-Dice/

Lejaren Hiller: ILLIAC Suite for String Quartet (1957)





(Source: Illinois Distributed Museum)

youtu.be/n0njBFLQSk8 &
music.arts.uci.edu/abauer/3.1/scores/Hiller_Illiac_Suite.pdf

ILLIAC & ILLIAC Suite @ UIUC!

Photos taken on July 15, 2025

Emily Howell (by David Cope) – Prelude (2007)

youtu.be/QHJqp4SlsoU

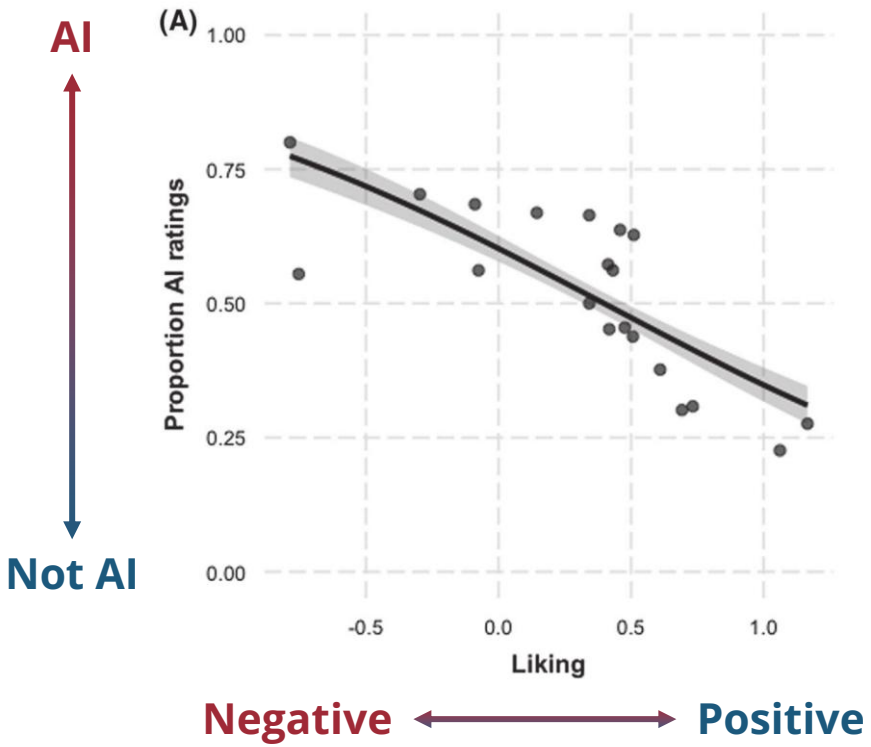
📖 Reading: David Cope on Emily Howell

- David Cope: 'You pushed the button and out came hundreds and thousands of sonatas'
  - Interview by Tim Adams published on *The Observer*, *The Guardians*, July 10, 2010

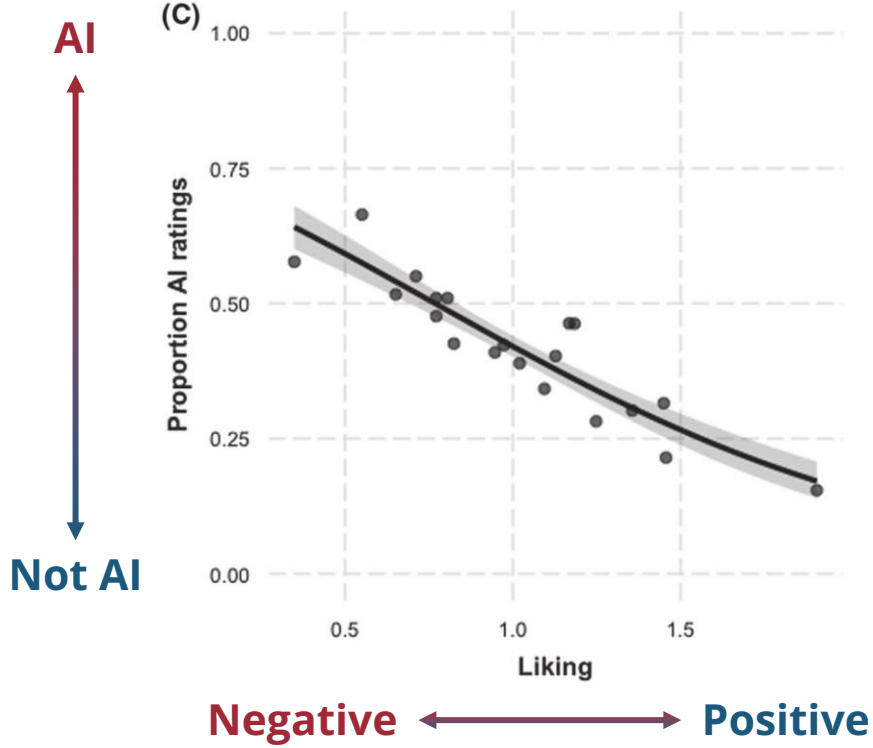
> "**People tell me they don't hear soul in the music**," he says. "When they do that, I pull out a page of notes and ask them to show me where the soul is. We like to think that what we hear is soul, but I think audience members put themselves down a lot in that respect. **The feelings that we get from listening to music are something we produce, it's not there in the notes. It comes from emotional insight in each of us, the music is just the trigger.**"

AI Composer Bias (Shank et al., 2023)

Electronic music



Classical music



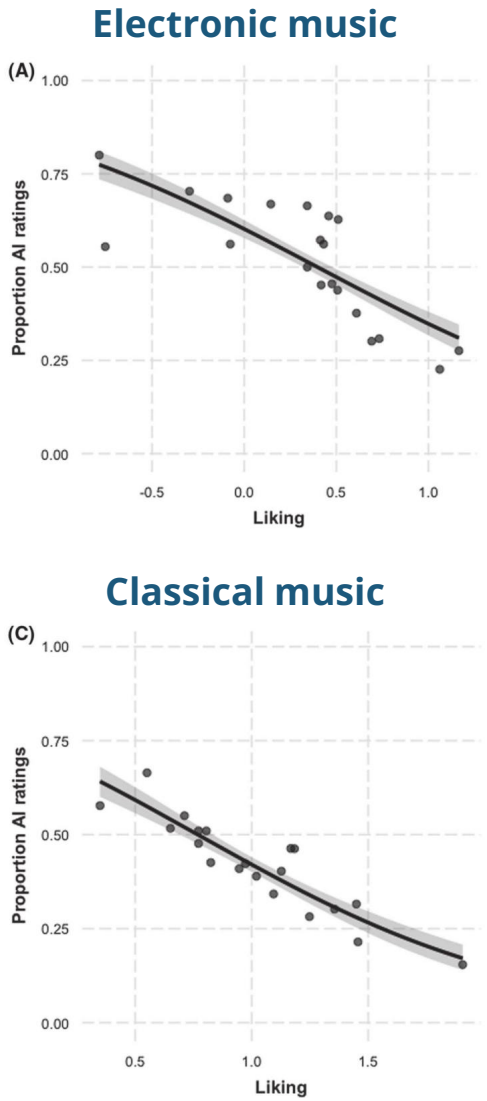
(Source: Shank et al., 2023)

How should we interpret these results?

Daniel B. Shank, Courtney Stefanik, Cassidy Stuhlsatz, Kaelyn Kacirek, and Amy M. Belfi, "AI composer bias: Listeners like music less when they think it was composed by an AI," *Journal of Experimental Psychology: Applied*, 29(3):676-692, 2023.

🤔 AI Composer Bias (Shank et al., 2023)

- **How should we interpret these results?**
- Three hypotheses:
  1. People think that the music is generated by AI, so they don't like it
  2. People don't like the music, so they think the song is likely generated by AI
  3. There is no causality
- How can we test these hypotheses?
- **Correlation does not imply causation!**



(Source: Shank et al., 2023)

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Moises

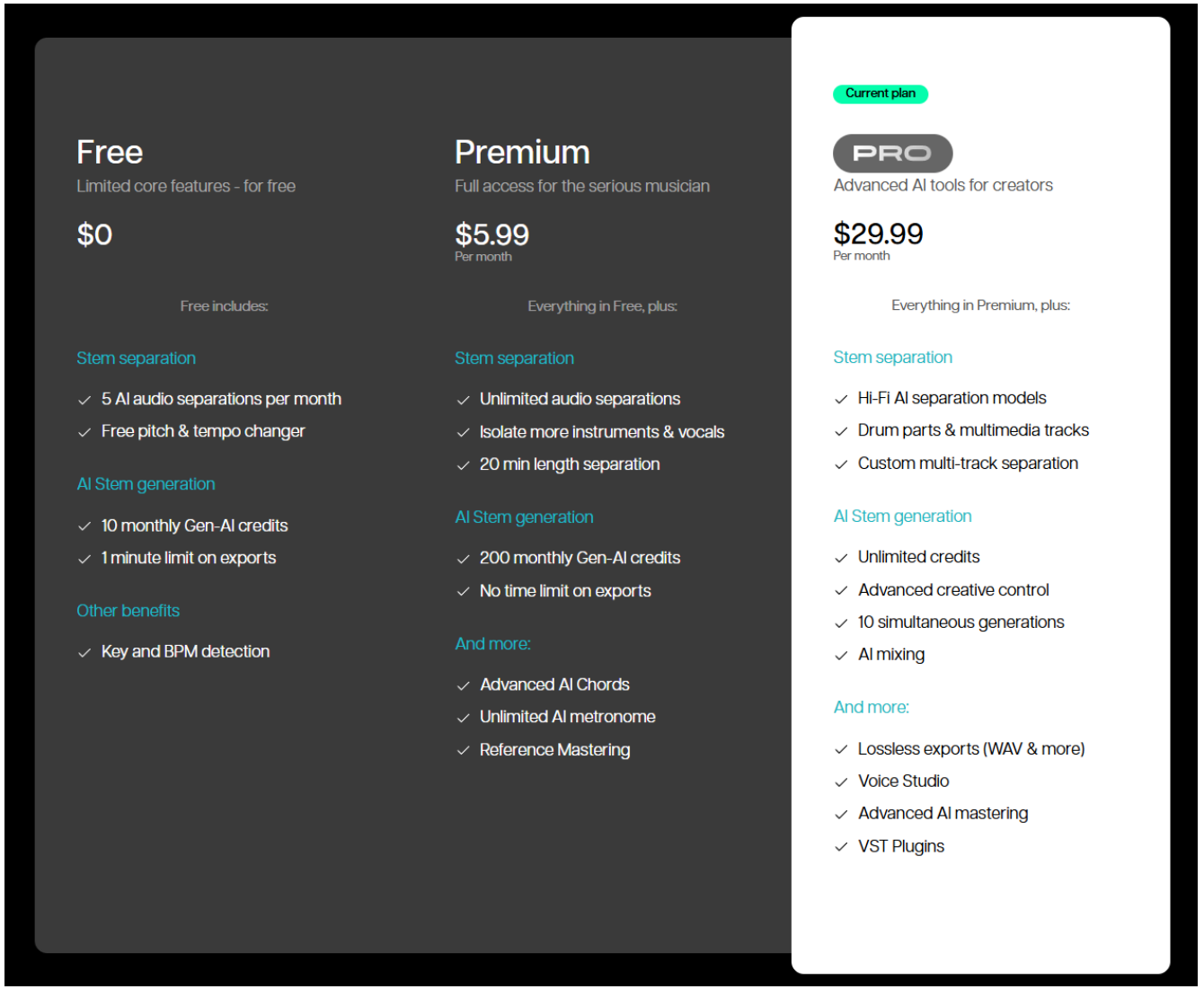
Moises

- 🤩 **Free Moises Premium license** until **December 2026**
- Register here
  - Use your **U-M email** (@umich.edu)
  - Sign up in your **desktop browser**
  - Ignore the prompt to upgrade your account

Moises Features

- Stem separation
- Smart metronome & Speed changer
- Pitch changer
- Key & chord detection
- Song section detector
- Lyric transcription
- Voice studio
- AI mastering
- *and more…*

Moises Premium vs. Pro



Moises Demo

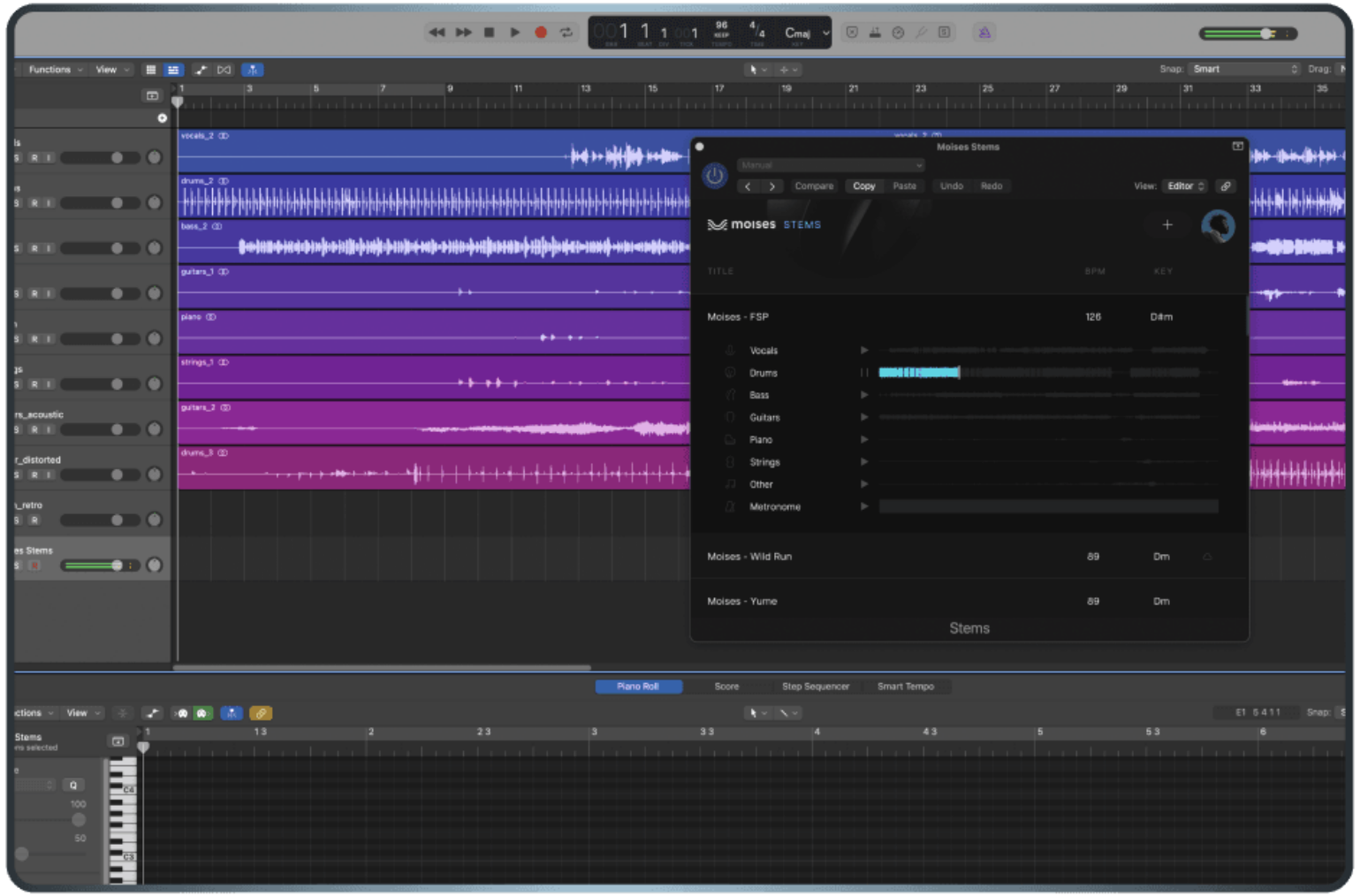
(Source: Moises)

studio.moises.ai

Moises App Demo

youtu.be/Pyfx95X8d1Q

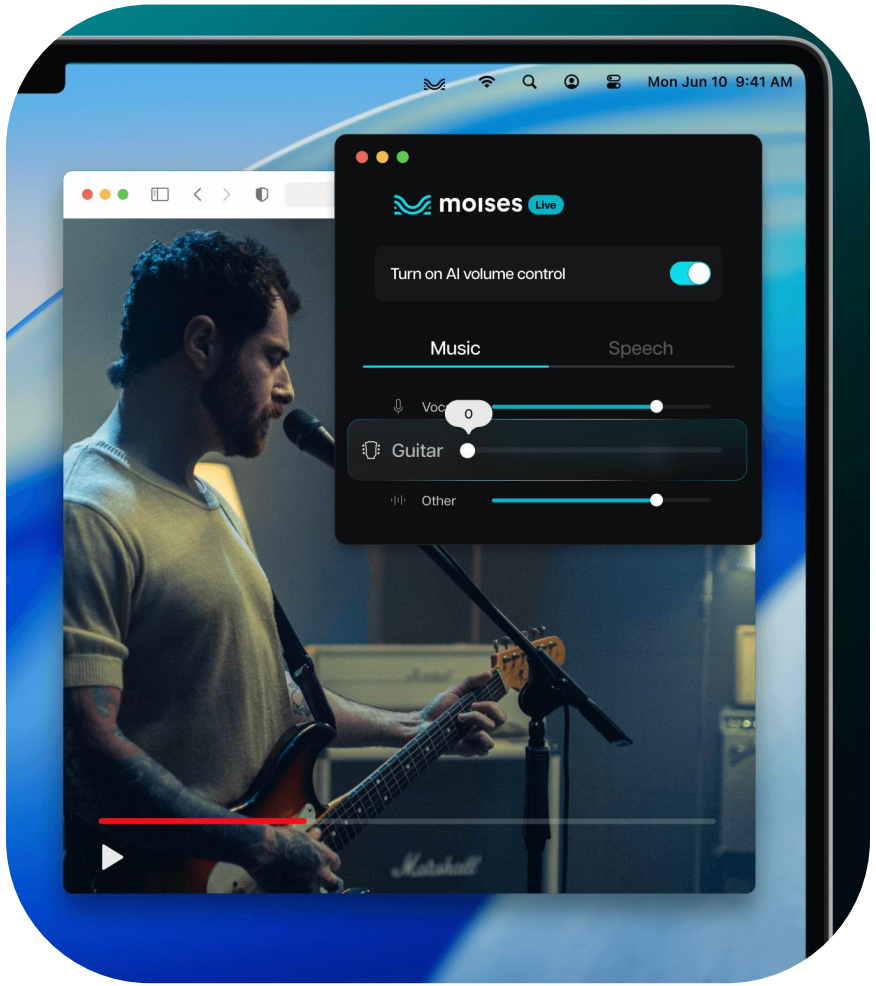
Moises VST Plugin



(Source: Moises)

moises.ai/features/stems-vst-plugin/

Moises Live



(Source: Moises)

moises.ai/products/live/

📖 Resources on Moises

- Part 1: “This is the way that a lot of tracks start”
- Part 2: Creating backing vocals from scratch
- Part 3: A new way to mix drums

Recap

Use Cases of AI for Music & Audio

(Source: The Denver Post)

(Source: UploadVR)

(Source: Descript)

(Source: Daily Bruin)

(Source: Universitaetsmedizin)

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uploadvr.com/iron-man-vr-breaks-free-from-cords-load-screens-on-quest-2/
descript.com/blog/article/what-is-the-best-audio-interface-for-recording-a-podcast
denverpost.com/2019/08/02/colorado-symphony-movie-scores-harry-potter-star-wars/
dailybruin.com/2023/08/04/theater-review-the-musical-les-misrables-offers-stellar-displays-and-impassioned-vocals

Music & Technology Co-evolves

Hildegard Dodel, Public domain, via Wikimedia Commons.
Taken at Hamamatsu Museum of Musical Instruments, August 2019.
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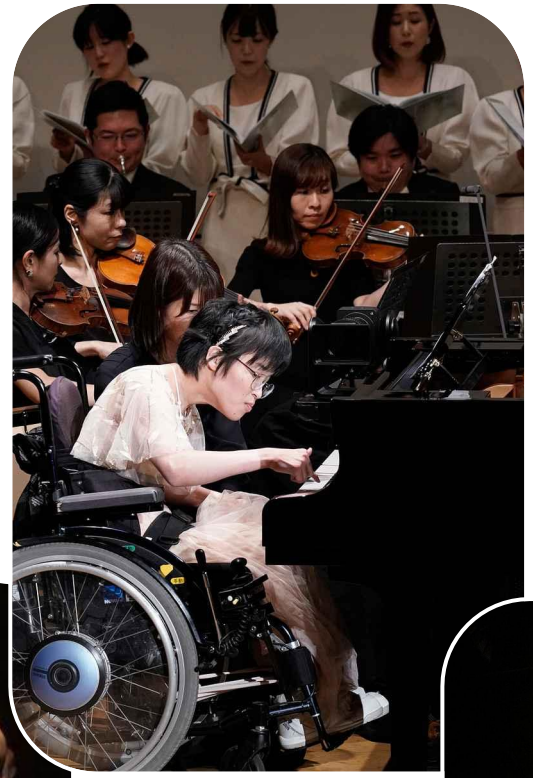

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The Early Days

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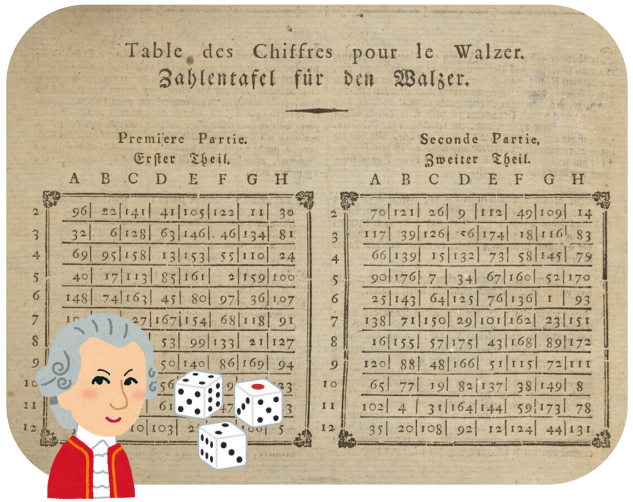

(Source: gbrachetta)

gbrachetta.github.io/Musical-Dice/

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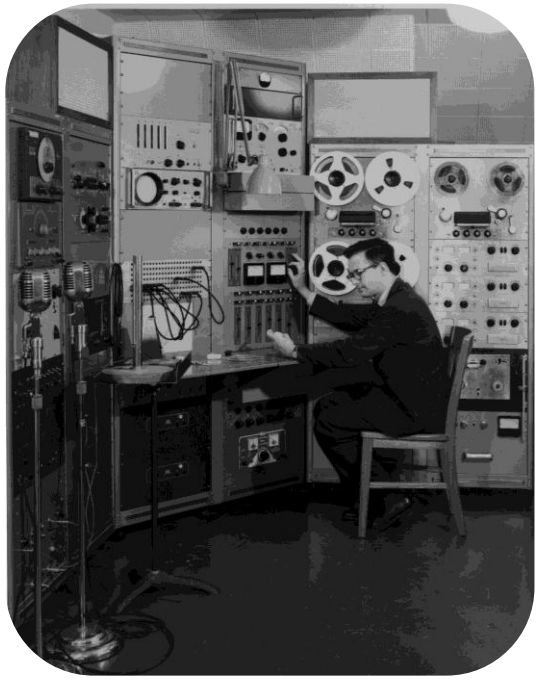

(Source: Illinois Distributed Museum)

Emily Howell (2003)

(Source: The Guardian)

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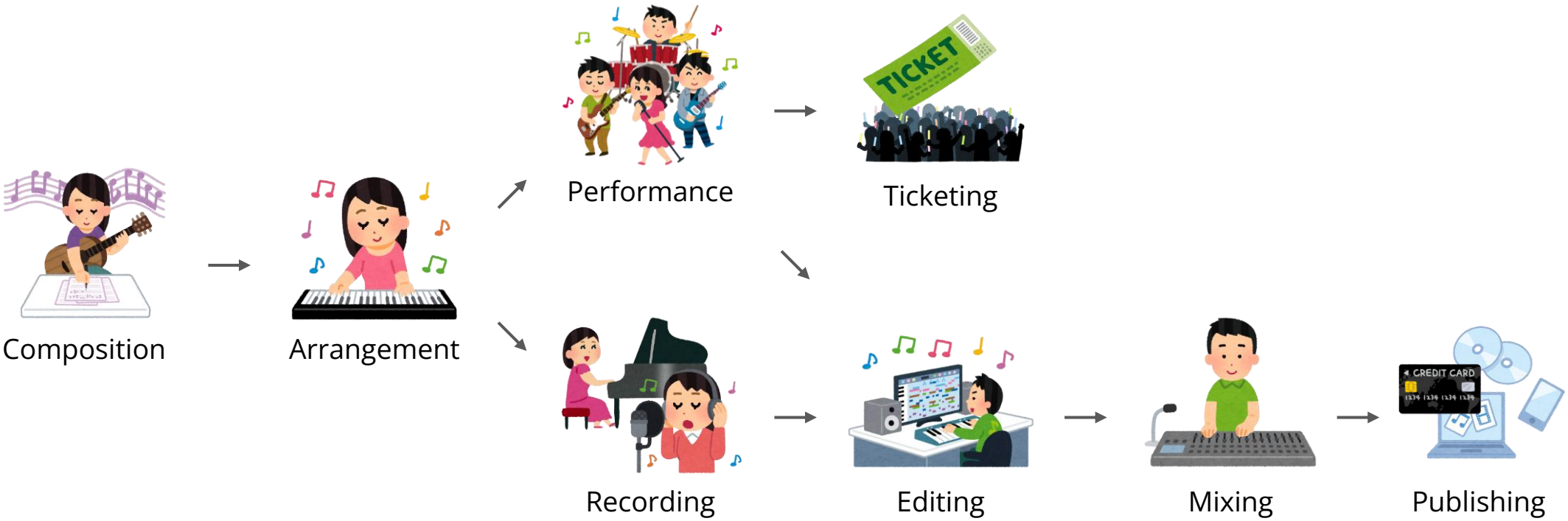
An Overly-Simplified Music Production Workflow



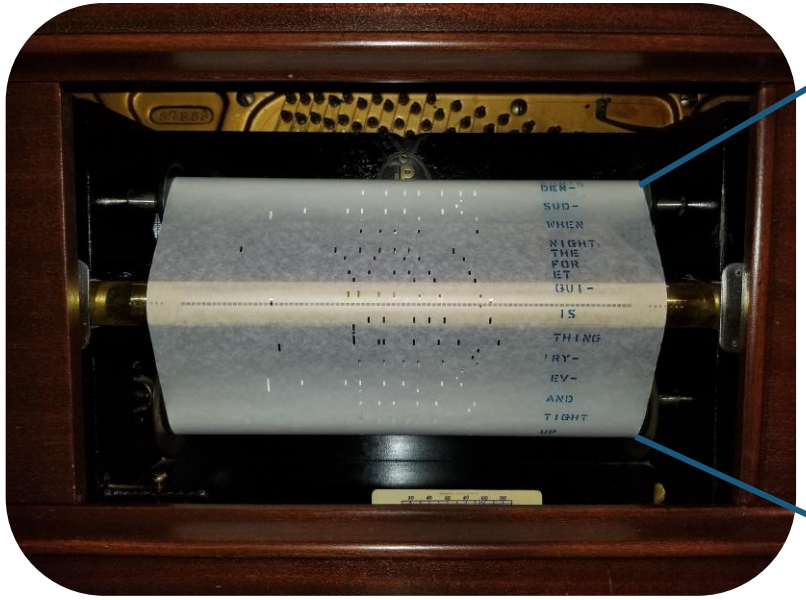
Moises Demo

(Source: Moises)

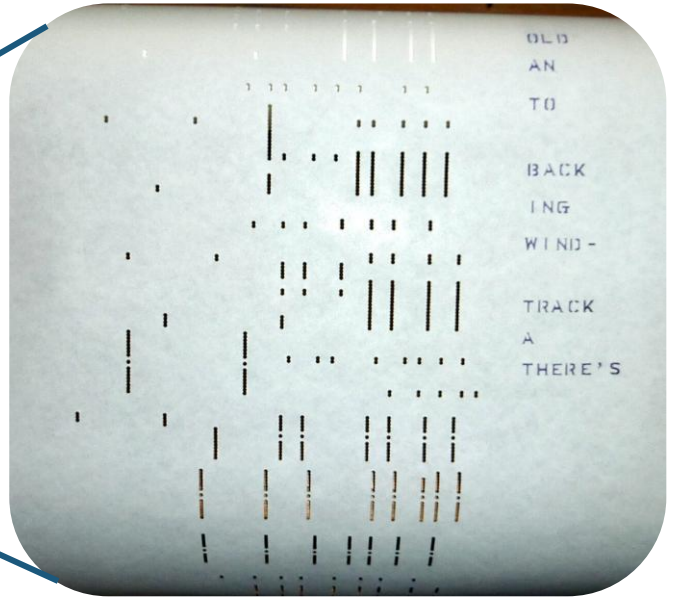
studio.moises.ai

Next Lecture

Symbolic Music Processing



(Source: Draconichiaro via Wikimedia Commons)



(Source: Tangerineduel via Wikimedia Commons)