Generative music

as an actual trend of digitalization in music industry

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Generative music: definition

Philip Galanter (2003),[1]
BA, MFA
Interactive Telecommunications Program,
New York University, New York, USA

Electronic music resulting from algorithmic composition processes of the creation of music scores and subtle modulation of performance and timbre. One of the directions of "generative art".

Lukasz Mazurowski (2015),[2]
Faculty of Computer Science, West Pomeranian University of Technology in Szczecin, Poland

The term "generative music" is a part of wide area of the "generative art" and it refers to music that has been created with the use of an autonomous system.

Andrey Ryzhkov,
curator of
Music Production program
at Moscow Music School
Moscow, Russia

«The music, created by the generating (programming, sequencer, randomizer, Puredata) and the sound source (instruments, synthesizers, samples or else) without the user's attendance»

Artyom Pys,
composer , lecturer at Tchaikovskiy conservatory, Moscow, Russia

«that kind of "music", which is created by the algorithms and AI.»

Aleksander Shukayev,
sound-designer,
founder of Sensorica Music label,
Moscow, Russia

«accepted random sound»

2021 survey findings

[1] Galanter, P. What is Generative Art? Complexity Theory as a context for Art Theory (2003). Interactive Telecommunications Program, New York University, New York, USA

[2] Mazurowski, L. Generative Electronic Background Music System // PROCEEDINGS OF THE INTERNATIONAL CONFERENCE OF NUMERICAL ANALYSIS AND APPLIED MATHEMATICS 2014 (ICNAAM-2014), Rhodes, GREECE

Classification of generative music products and services

- Sequencers and DAWs, generate specific parameters of music with AI usage (Max4Live, Reaper, …);

- Virtual spaces for generating music content algorithms by random numbers (OpenAI and other projects);

- Virtual services for generating looped music streams from released content and/or samples base (Mubert);

- Regulated sound sources (virtual instruments, synthesizers, voice samplers, streaming players and else);

- Robotic composers (robotic musicians, vocaloids, robotic DJ's)
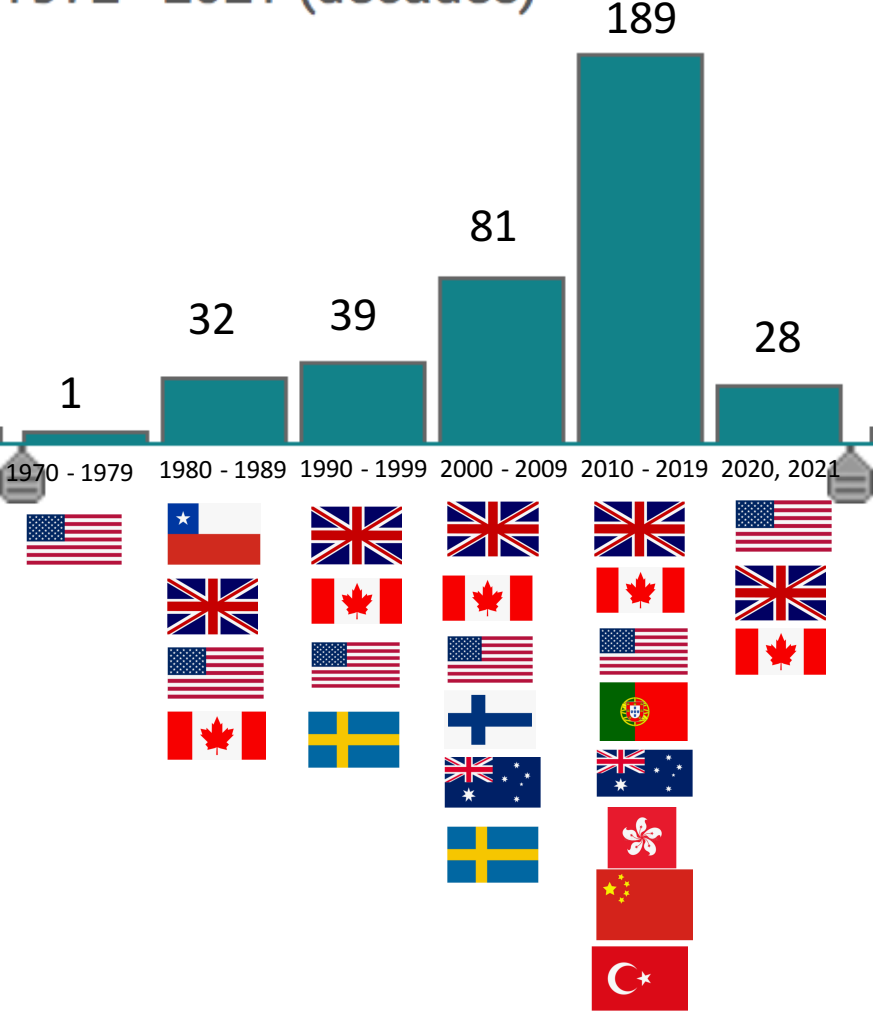
Topicality and academic novelty

- Exponential growth of academic publications about "generative music" domain (decade of 2010-2019);

- Market segmentation of generative music products is still unclear;

- Low percentage of publications about "generative music" comparing with total number of publications about "music industry"

The selection of international music industry studies on the topic of "generative music"

0.9 %

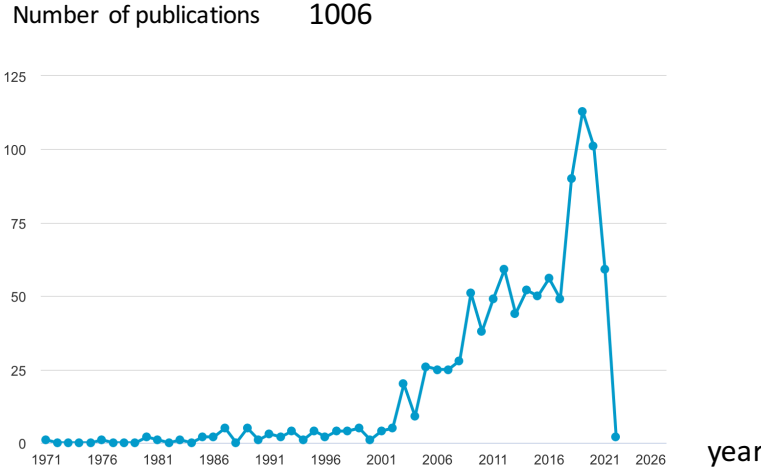370 publications vs. 38,752 publications on "music industry" keyword

20.1 %

1,006 publications vs. 4,994 publications on "music industry" keyword

1972 - 2021 (decades)

Source: ProQuest

Keyword: "generative music"

Number of publications   1006

Keyword: "music industry"

Number of publications   4994
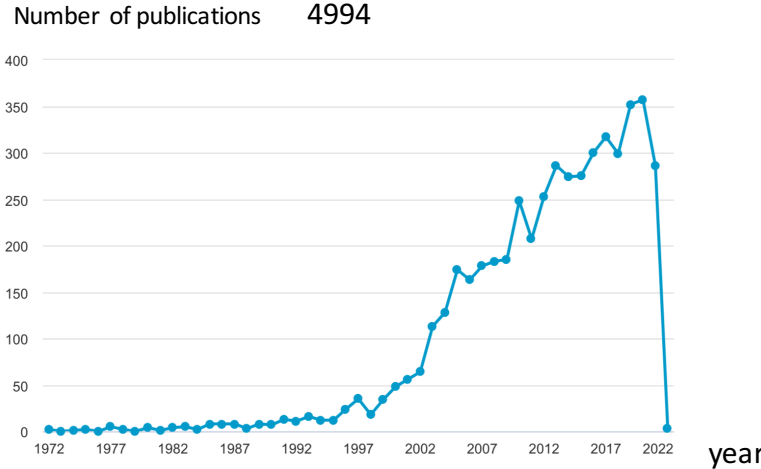
Source: Scopus

Purpose and tasks of the research

Purpose:

To reveal specific characteristics of the impact of generative music on the digital transformation of the music industry in Russia.

Tasks:

- To reveal the specific characteristics of the innovative projects in the sphere of generative music such as FONMIX, Mubert, DJ Imanbek and Muse Net by the case-study results based on the open sources data analysis.

- To get the image of the economic impact of the local generative music startup services on the local management of the actors in music industry based on the open sources data analysis (FIRA PRO).

- To reveal the main drivers of the composer's activity transformation by the impact of the generative music services based on interviews content-analysis.

Methods

- **Case-Study**
  (The company website, the main product, are there any streaming-service subscription selling, the clients and company placement, the fact of AI algorithms usage or artworks of the human composers by the company, the information about the reach of the company by the FIRA PRO database);

- **In-depth Interviews With Experts**
  (10-12 interviews on the pilot research with composers, sound producers and generative music project creators from Moscow to reveal their images of generative media content issues.

- **The Usage of foresight exercise methods**
  (horizon scanning, SWOT, STEEPV-analysis, trends analysis, scenario analysis, making of the musical innovations roadmap with horizon of 5-7 years perspective)

Expected results

- Eliciting the formalized role (the trends of being / the technologies impact) of the AI in composing and the place / weight / sector of generative music in the industry (robotic music);

- Revealing the recommendations on culture policy in the music industry;

- Creating of the documentary movie (or documentary movie series) on the forming of the creative industries and composers in Russia, USA, Germany, Britain, Finland, Sweden, Japan, China, South Korea and/or other countries based on the final data. Showcasing the art of multicultural composers as an active content (from the perspective of the context and concept).

Revealing the economic effect of the generative music

Search request	Information source
1. The space of generative music products and services	• Interviews by experts; • Open sources information (IFPI, Fira Pro, conference press-releases, RBK, VC.RU)
2. Economics classification of the generative music services in Russia	Fira Pro database
3. The dynamics of the economic reach in 3-5 years (2016-2021)	Fira Pro database
4. The comparison of the reach between generative music services and top-10 music industry organizations	ISSEK HSE research data from research project «Measuring the creative economy in Moscow» (2019 - 2021)

Generative music services in Russia

service	Mubert	FONMIX	Effective Records	MuseNet
Website	https://mubert.com/	https://fonmix.ru	https://effective-records.com/	https://openai.com/blog/musenet/
Product	Render, Studio, API, Play, for Streamers, Business	FM Box	DJ Imanbek	Online app for music generation
Selling of the subscription on music streaming service	yes	yes	yes	no
Clients	Composers, artists, musicians, creators, brands, listeners	Cafes, bars, restaurants, supermarkets, malls, clothing shops, show rooms, hotels, hostels, gyms, SPAs, beauty saloons, auto saloons, dealer centers, gas stations, karaoke clubs	Composers, DJ's, artists, musicians, creators, brands, listeners	Creators, brands, listeners
AI usage	yes	no	yes	no
Live composers artworks usage	yes	yes	yes	no
Legal Entities	ООО «ОНЛАЙН ПАТЕНТ» **Код** ИНН **7714903709** **ОКВЭД:** ОГРН **1137746351522** 37.09	ООО «ФОРМАКС» **Код** ИНН **7734361250** **ОКВЭД:** ОГРН **1157746774184** 59.20	ООО «ЭФФЕКТИВ РЕКОРДС» **Код** ИНН: **7709938382** **ОКВЭД:** ОГРН: **1137746948569** 82.99	Russian Composers Union https://unioncomposers.ru/composer/view/?id=939
Information obtained from FIRA PRO				Not suitable. To reveal the actual information additional researches and interviews required (Karina Abramyan – the head of Russian Composers Union)

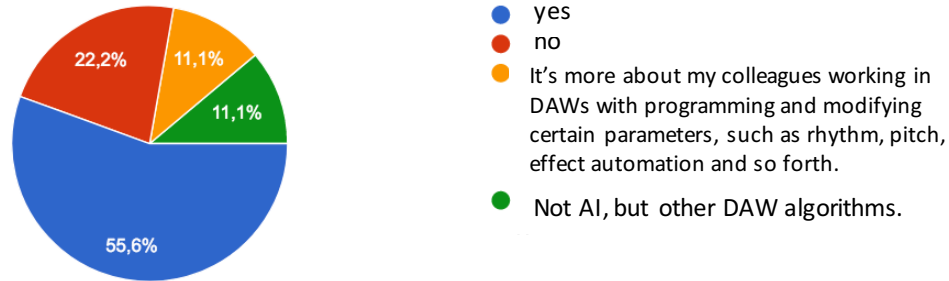# Categorical questions

- Comparison of the generative music and live composer art effectiveness;

- Comparison of the experts estimations of the results on the integration of the generative music services into composer's artworks;

- The perspectives of changes in cultural law with the purpose of splitting the labor scopes between AI and human composers artworks to upgrade the music industry.
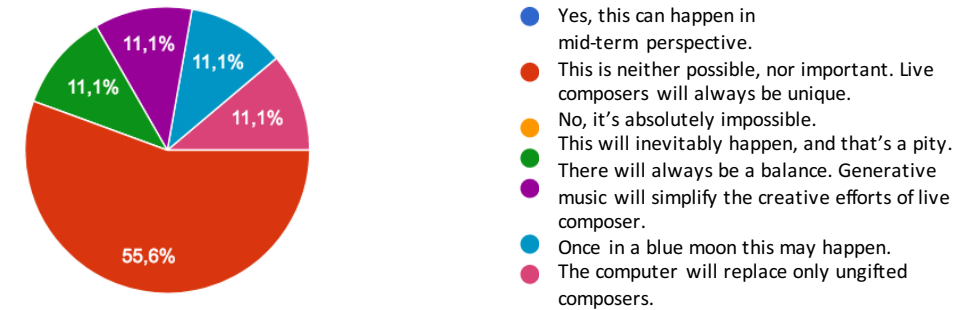
Experts survey first results:

Have you or your colleagues ever experienced composing the music pieces with application of AI-based music generation services?

9 answers

- ● yes
- ● no
- ● It's more about my colleagues working in DAWs with programming and modifying certain parameters, such as rhythm, pitch, effect automation and so forth.
- ● Not AI, but other DAW algorithms.
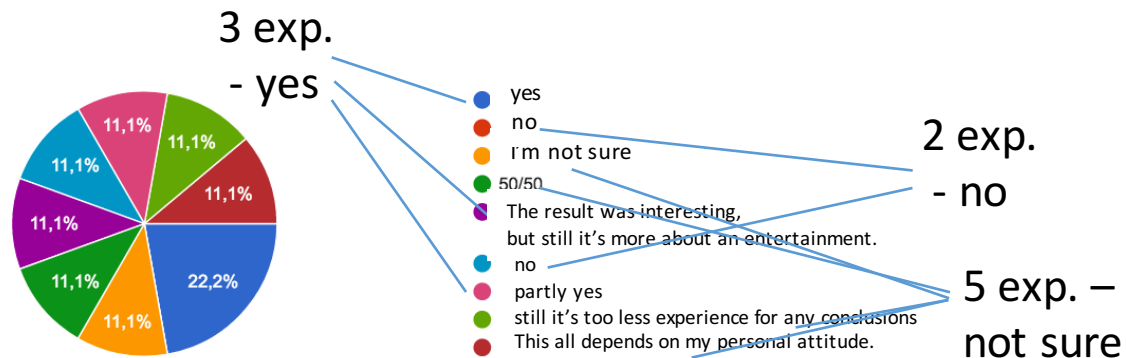
22,2% 11,1% 11,1% 55,6%

Now let's think about future. Do you estimate, that generative music services would ever replace the human composer and displace live music authors out from music industry?
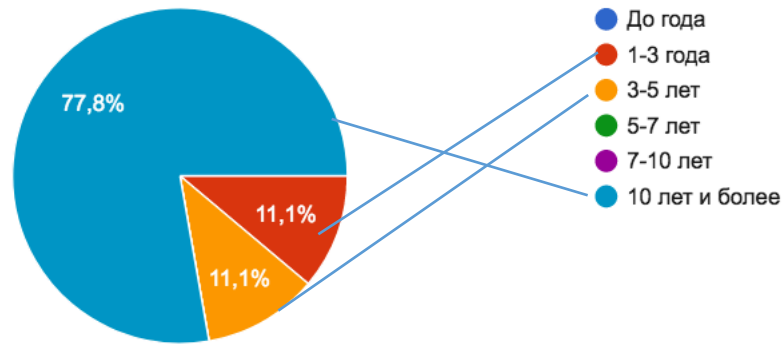
9 answers

11,1% 11,1% 11,1% 11,1% 11,1% 55,6%

- ● Yes, this can happen in mid-term perspective.
- ● This is neither possible, nor important. Live composers will always be unique.
- ● No, it's absolutely impossible.
- ● This will inevitably happen, and that's a pity.
- ● There will always be a balance. Generative music will simplify the creative efforts of live composer.
- ● Once in a blue moon this may happen.
- ● The computer will replace only ungifted composers.

Did you like the resulting generative music pieces?

9 answers

3 exp.
- yes

11,1% 11,1% 11,1% 11,1% 11,1% 11,1% 22,2%

- ● yes
- ● no
- ● I'm not sure
- ● 50/50
- ● The result was interesting, but still it's more about an entertainment.
- ● no
- ● partly yes
- ● still it's too less experience for any conclusions
- ● This all depends on my personal attitude.

2 exp.
- no

5 exp. –
not sure

Link: https://forms.gle/Z4J1oq78ALGbjKsF8

Information about experts

How long have you been working in digital music niche?
9 answers

Legend:
- До года
- 1-3 года
- 3-5 лет
- 5-7 лет
- 7-10 лет
- 10 лет и более

77,8%
11,1%
11,1%

What is your age?
9 answers

What is your level of music education?
9 answers

Legend:
- Higher education (BA, specialist)
- Higher education (MA)
- Tertiary education (Ph.D.)
- College certificate
- Incomplete higher education
- Professional re-training certificate

- Incomplete higher education
- Music school
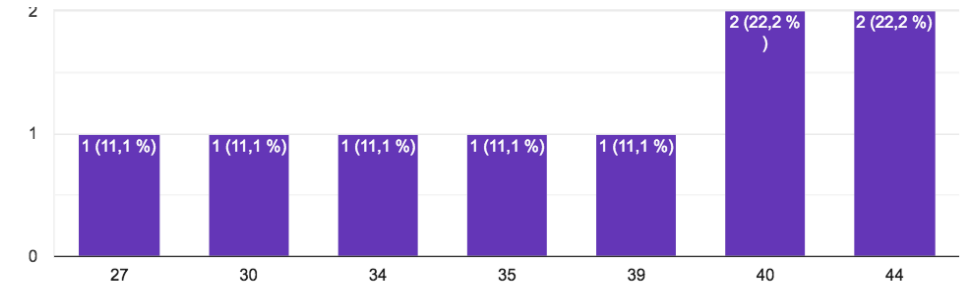
The sectors of music industry where experts work:

- Music in Cinema
- Digital Stage (digital acoustic, live-electronics, interactive sound installation)
- Generative neural networks
- Functional music (operas, theaters)
- Sound recording, music production
- Sound Design (recording, mastering, FOH, immersive mastering, live events sound design.)

The perspectives of the generative music impact: opinions

- *Could the human composer complete any task better than the generative music service? Why?*

- *Do you believe that generative music services make it easier for composers in creating music?*

- *Are there any measures of the cultural policy laws you would suggest in purpose of upgrading generative music without any harm for human composers?*

|	«yes»	«not sure»	«no»	«yes»	«no»	«not sure»	
Number of experts	4	2	3	2	2	3	The separation of the processes on the «human» and «artificial» in case of achieving various tasks
The arguments	The aspects of the live performances, the human nature art	AI generates the billions of music varieties but without solving an art value	There are no AI music without the human composer who manages it	In solving everyday tasks and creating commercial music	They mostly distracts	It is still on a level of solving regular tasks but not on creating any artworks without concept or context. So mostly it depends on the kind of a music.	

Listening to generative music service content samples

Parameters:

- Music texture: melody, bass, middle voices, rhythm;
- The quality of timbre;
- Performing techniques

MuseNet Concert (2019) https://www.twitch.tv/videos/416276005
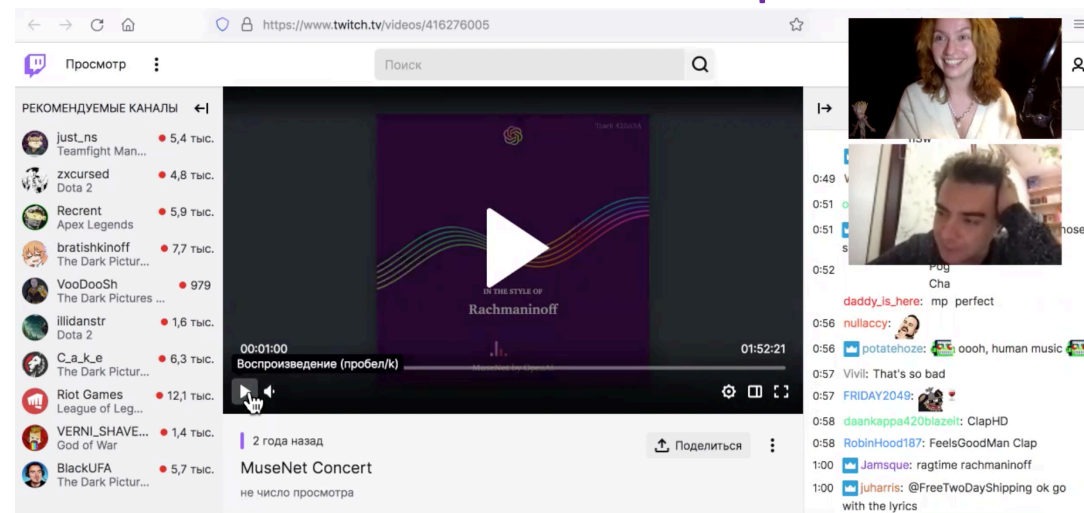
Time Code	Composition Title	Style	Reference	Similarities with a reference	Differences	Notes
00:00	In Style of COUNTRY	country	–	Similar to «Воскресенье», "The Beattles"…	Singing form, neutral harmony, country texture	Low sampling quality, guitar strum imitation, highlited MIDI-sound of timbres
00:33	In the Style of Rachmaninoff	classical	Rachmaninoff	Similarities with the Rachmaninov's second concert on texture and techniques	In style of the reference, but without copying anything	Low sampling quality for piano keys imitation, bad live performance immitation
01:50	In the Style of Michael Bubble	country	Michael Bubble	Not stated	Music by novices	Low sampling quality for guitar mastering, No storyline
02:51	In Style of Jazz	Jazz?	–	Not stated	Music by novices	Low sampling quality of the saxophone, incorrect integration of the probability effect

Video-discussion with Aleksei Sioumak: https://drive.google.com/file/d/1HpiD0jl4FdbOVRAZQtklOtMR1s7XbKM7/view?usp=sharing

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