Future Music #3

16-17 June 2021

WED 16 JUN 2021 // Livestream 5pm – 8pm

Unsupervised

The Machine Learning for Music (ML4M) Working Group

"Unsupervised Learning is the "Dark Matter" of AI" Yann LeCun

AURAMACHINE by Vicky Clarke

Unsupervised is a new concert series created by the Machine Learning for Music (ML4M) Working Group – a community of composers and audiovisual artists exploring the creative use of emerging Artificial Intelligence and Machine Learning technologies led by PRiSM Lecturer in Composition, Dr. Sam Salem and Professor Ricardo Climent, Professor of Interactive Music Composition and Director of NOVARS Research Centre at University of Manchester.

ML4M includes postgraduate students from both RNCM and University of Manchester, as well as guest artists, supported by Machine Learning experts at the Alliance Manchester Business School and PRiSM.

You will be able to submit questions to the Panel, in advance and during the event, through Twitter to @RNCMPRiSM using the hashtag #PRiSMFutureMusic or by e-mailing the PRiSM Centre Manager sam.duffy@rncm.ac.uk.

All PRiSM Future Music events will be livestreamed, click here to watch each broadcast. You can also watch over on Twitter.

Read on for a detailed programme and notes about each artist.

Programme

5pm // Concert 1
Tasos Asonitis, Symbiosis as a metaphor
Tywi J H Roberts, Blodeuwedd
Ellen Sargen, You may own us but we are going to inform on you
Chris Rhodes, Semiconductor

6pm // Panel Q&A
Led by Dr. Sam Salem (PRiSM) and Professor Ricardo Climent (NOVARS)

7pm// Concert 2
Zakiya Leeming, Sad Dog Eating
Rob Laidlow, Rose Green
Vicky Clarke, Aura Machine
Hongshuo Fan, Metamorphosis

Artists

Tasos Asonitis

Biography

Tasos Asonitis is a sonic and audiovisual artist whose activities encompass various facets of digital arts. His primary interest is on immersive virtual environments that can be described by the creative entanglement of computer generated music and 3D graphics. His work deals particulary with non-anthropocentric themes and attempts to examine objects outside of their assigned referentiality. Asonitis' artistic output however is not limited to the audiovisual domain, and includes multi-channel fixed media pieces, sonic installations and compositions for moving image. Recipient of the EPSRC doctoral scholarship, he is currently doing a PhD in Composition at NOVARS Research Center.
Follow on instagram: tasos_asonitis_av
Contact: tasos_a@hotmail.com

Programme Note

The term "black box of Artificial Intelligence" is used to describe a part of the learning process of a neural network that is not fully transparent to the user. This elusive element of machine learning is the focus of "Symbiosis as a Metaphor". The work metaphorizes the learning process of a particular neural network, trained in sound generation, as a conflict between two organisms: on one hand the original sounds that the network was trained to imitate, on the other hand the sounds generated by the network in response, after various training phases (epochs). The first organism is presented as ideal, complete and organic, while the second as imperfect, discrete and mechanic. The clash between the two sets the stage for the narrative of the piece, an audiovisual symbiotic struggle. The word "metaphor" alludes to the ideas of object-oriented ontology which, among other things, posits that the true nature of objects exceeds human understanding and can only be approached by means of metaphorism.

Tywi J H Roberts

Biography

Tywi John Hywel Roberts is a composer and performer from South Wales. He has written for groups such as Psappha, Festivo Winds and the Nexus Duo. In 2019 he was the joint winner of the Rosamond Prize competition for his collaboration with poet Samantha Weaver. Tywi's work frequently incorporates innovative technologies, and he has created pieces involving virtual reality, live coding, super low-latency streaming technology, and multiple laptops. In February 2020 he was the musical director of the premiere performance of the UnHeard Hybrid Orchestra, and played a similar role in 2021's UnHeard Hybrid Online, which headlined the first RNCM PLAY Festival.

Earlier in his career Tywi was part of Bristol post-rock band A Procession, and earlier still he studied a Master's in Sonic Art & Digital Media Production at the University of Sheffield with Professor Adrian Moore. Since 2005, he has also spent a number of years working in the context of Robert Fripp's Guitar Craft seminars.

Tywi's current PhD research at the Royal Northern College of Music (supervised by Mauricio Pauly, Larry Goves and Rodrigo Constanzo) is focused around mapping the methodologies of digital composition over to the acoustic space, and exploring this work through hybrid electronic/acoustic ensembles. https://www.tywihywel.com/ Twitter (@tywi_hywel).

Programme Note

Blodeuwedd is a hybrid chorale for four female voices, composed in combination with audio generated by a machine learning algorithm (sampleRNN) trained on a dataset of sampled owl sounds, non-verbal soprano singing, and spoken Welsh. It also makes use of 'The Big Sleep' – a freely available algorithm for generating images by using CLIP to guide BigGAN. It is a multi-media exploration of a legend from the Welsh Mabinogion, about a woman created from flowers and later turned into an owl.

The text was provided by poet Samantha Weaver. Sammy and myself both have roots in Wales, and more than a passing familiarity with the Welsh language, but neither of us speak it fluently. Algorithms, too, have an incomplete relationship with whatever 'language' on which we train them; and in many cases may never become 'fluent'. This is one of the many resonances which guided our inspiration for this work.

Hybridity, cross-species transformation, and liminality are recurring themes in the Mabinogion; all of which machine learning is positioned well to explore. The decision to structure our AI-generated results around

a more traditional chorale is intended for the two aspects to complement one another, and find a harmony between old and new forms.

Ellen Sargen

Biography

Ellen Sargen is a composer and flautist. She is Music Director for CoMA Manchester and since beginning her PhD in 2019, has coordinated fabric collective, a composer-performer group set up to create and perform new collaborative works centred around the unique identities of participants. Through this work Ellen strives for an inclusive space for diverse music-makers. This work often features personal narrative and is concerned with providing space for participants to develop their practice.

Ellen is an associate composer of University of York Music Press. Her music has been performed across the UK and abroad where she has worked with ensembles including Ligeti Quartet, Ensemble 360, Psappha, Ensemble Recherche, NoteBene etc. Recent commissions include those from National Opera Studio, Classical Sheffield Festival and Music in the Round (2018-2020). Ellen is a NWCDTP-funded PhD student studying at the Royal Northern College of Music and previously studied at the University of Sheffield (BMus, MA).
www.ellensargen.com and my Twitter: @ellensargen

Programme Note

'You may own us but we are going to inform on you' is a piece written in collaboration with Sarah Watts and uses machine learning code PRiSM SampleRNN with the aid of Christopher Melen. Initially conceived of to offer a 'between point' in the voices of composer and performer, this piece uses machine learning to fuse improvisation and composition; to fuse the found behaviours in two distinct voices; and to offer a glimpse of an artificial identity, as heard and generated by an algorithm.

The contributions of our artificial collaborator are weaved into the composed track. Given the same space as a human collaborator, the artificial voice remains largely unedited or tampered with and becomes an equal voice in the collaboration. The exhilaration and discomfort of likening a robot to a human, bleeds into the narrative of the final piece. Ruminations on the implications of artificial intelligence in society, on 'social scores', normative patterns and invisible bodies; on Google's DeepDream Images and dogs-heads-as-meatballs; and on reality and corporate control combined, twisted and splurged into uncomfortable truths[1].

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[1] The title is a quote from Hito Steyerl's chapter 'A Sea of Data' in her book Duty Free Art in the Age of Planetary Civil War.

Chris Rhodes

Biography

Chris Rhodes is a Manchester-based composer of Electroacoustic music. Studying at NOVARS Research Centre (University of Manchester), he is a final year PhD candidate in Music Composition investigating the use of biometric data to stimulate interactive music and art. His work does this through the use of wearable sensor technologies and the latest developments in machine learning (ML) processes within music. His music has been performed internationally, enjoying a recent performance of his work at the 16th Sound and Music Computing conference. His research regarding the application of ML to music composition is award-winning.

Twitter account: https://twitter.com/crhodes1992

LinkedIn account: https://www.linkedin.com/in/chris-james-rhodes/

Website: www.chrisrhodesmusic.co.uk

Programme note

Semiconductor is a piece for virtual reality (VR), game-engine (mixed reality – MR), live electronics and performer. The piece is performed by a physical performer wearing biometric sensors on their arms, in order to directly interact with digital worlds (in both VR and MR), and is split into two movements. The sensors worn by the performer retrieve biometric data regarding how the performer's arms move and how the muscles within their arms behave. This biometric information is processed and made usable through current machine learning (ML) methods, which allows nuanced and sophisticated human-computer interaction (HCI) to occur.

The first movement of the piece (namely, Musica Tangibile) is performed exclusively within VR and allows the performer to explore how biometric information, pertaining to muscle amplitude of the arms (i.e., electromyographic data), can be used as a novel layer of information within VR for musical and creative outcomes. The performer does this by exciting a musical 'atom', which is an extension of their biometric presence within VR. The second movement (Semiconductor) is performed in front of a screen showing the game-engine elements of the work, which permits the performer to play an abstract digital violin through sophisticated HCI methods. As a result, the physical performer is able to manipulate digital violin pegs and conduct them to develop interesting sound worlds and compositional devices.

Zakiya Leeming

Biography

Zakiya Leeming is a doctoral composer at the Royal Northern College of Music and member of PRiSM (Centre for Practice and Research in Science and Music). Zakiya's research explores composition informed by science and technology through ongoing collaborations with scientists, health data researchers and performers. A new work for ISARIC4C, an international consortium of scientists whose outputs informed the UK government on COVID-19, will be featured in Future Music #3. Other commissions include Psappha, Explore Ensemble, Bury Choral Society, Aurora Percussion Duo and more. Zakiya was the recipient of the Examiner Newspaper Scholarship and the Dean's award for Excellence with Honours during her undergraduate degree at the University of Tasmania. In her Masters degree at the RNCM, Zakiya was awarded the Soroptimists International Manchester Award in Composition, The Edward Hecht Prize and a Gold Medal in composition. Zakiya is founding co-director of composer collective Incógnito and is currently working on a piece for Ensemble Recherche in collaboration with University of Liverpool Chemist Professor Mathias Brust.

Programme Note

Sad Dog Eating is the latest in a series of iterative pieces created in collaboration with clarinettists Laurel Saunders and Grace White. Led by the findings at each stage of our creative partnership, we explored physical, acoustic and psychological aspects of the clarinet's sound possibilities through open and graphic scores, at all times mediated by the particularities of online meeting platforms and recording devices. The dataset was created from these recordings. In a compositional strategy informed by the machine learning process, I chose samples from the generated material to layer and 'chunk' into loops for the performers to learn. Laurel and Grace then created acoustic loops informed by the layered material. All three stages of material generation are present in various forms in the final piece, named after Grace's interpretation of a particular sound in one of the loops. In a mirror to our iterative cycle in which human/machine origins became ever more obscured in continuously blended outcomes, Grace's description struck me as a title that perfectly captures this ambiguity. The images were created using Artbreeder and with further manipulation and editing by myself.
https://www.artbreeder.com/browse

Robert Laidlow

Biography

I'm fascinated by the trend of constantly training new machine learning models rather than plumbing the depths of what we have already – a trend extending beyond art to major commercial uses of this technology. I came across some information on the large carbon footprint of training major language and advertising models that I felt was difficult to justify, and as a result wanted to experiment with a work that trained no models whatsoever. Instead, I pick up discarded and abandoned machine learning models

from the Internet's kerbside. I work with what I can find. I was surprised that this included a huge number of machine learning models geared towards providing a nostalgic kick – generating 8-bit audio, new Pokemon cards, or beating the old Mario games. There's something strange about using a technology that has unknown, potentially disastrous, consequences for our future to re-animate something of a nostalgic past.

Programme Note

Sources:

8-bit soundtracks:

LakhNES – Chris Donahue, implemented by Hongshuo Fan

Reinforcement Learning Video Games:

MarI/O – Sethbling (YouTube)

Hide and Seek – OpenAI Gym

Space Invaders – AI Playpen (YouTube) via OpenAI Gym

Images: The BigSleep – Advadnoun (twitter.com/advadnoun)

Description of the Climate Change Pokemon: Talk To Tranformer – Huggingface

Synthesizer in 'GREEN': This Patch Does Not Exist - https://www.thispatchdoesnotexist.com/

"David Attenborough": Vocodes – vo.codes (twitter.com/echelon)

Information on neural network carbon footprint:

https://branch.climateaction.tech/2020/10/02/ai-and-climate-change-the-promise-the-perils-and-pillars-for-action/

https://www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/

Vicky Clarke

Biography

Vicky Clarke is a sound and electronic media artist from Manchester, UK. Working with sound sculpture, DIY electronics and human-machine systems, she explores our relationship to technology through sonic materiality, live AV and browser-based artwork. Vicky won the Oram Award 2020 for innovation in sound and music technology and is working towards her first album. She is currently artist in residence at NOVARS research centre, University of Manchester exploring musique concrete and machine learning. The residency builds on her AI research trip to St Petersburg/Moscow as a selected artist for UK-RUSSIA Year of Music, British Council and her project "MATERIALITY" exploring sound sculpture as a gestural and acoustic medium to interface the physical and digital; collaborating with researchers at the National

Graphene Institute, she developed a conductive graphene performance interface for Ableton Live. Her work has featured on "SONIC FUTURES: How technology is guiding electronic music", British Council and "Artist DIY" for FACT magazine in 2020. As director of Noise Orchestra and as a solo artist Vicky has performed/exhibited with National Science & Media Museum, MUTEK, CTM, Q02 and is an AMPLIFY DAI artist, a programme connecting the work of women artists in UK, Argentina and Canada supported by MUTEK, Somerset House Studios and British Council.

Website: www.vickyclarke.org

Twitter: @vickyclarke_ Insta: @vickyclarke_sound

Programme note

'The genuineness of a thing is the quintessence of everything about it since its creation that can be handed down, from its material duration to the historical witness that it bears.'

> The Work of Art in the Age of Mechanical Reproduction, Walter Benjamin

A sound object has an aura. Taking the starting point of the sound object, a sonic fragment or atom of authentic matter, what happens to this materiality when processed by a neural network? What new sonic materials and aesthetics will emerge? Can the AI system project newly distilled hybrid forms or will the process of data compression result in lo-fi statistical imitation? For this piece, my first experiment with neural synthesis, I sought to collide the two disciplines of musique concrete and machine learning to take the listener on a journey through the process of training a SampleRNN model.

A tale of two states, AURA MACHINE begins with the training data, the original source material comprising the concrete dataset. Field recordings were categorised into distinct classes; 'Echoes of Industry' (Manchester mill spaces), 'Age of Electricity' (DIY technology, noise & machinery) and 'Materiality' glass fragments and metal sound sculptures. The second state is the purely generated AI output audio.

Mastered by Katie Tavini

Mixing in collaboration with Dujat

Hongshuo Fan

Biography

Hongshuo Fan 范弘硕 (b.1990) is a Chinese cross-disciplinary composer, new media artist and creative programmer. His work has involved various real-time interactive multimedia contents, such as acoustic instruments, live electronics, generative visuals, light and body movements. His research and creative interest focus on the fusion of traditional culture and cutting-edge technology in the form of contemporary art. His output spans chamber music, live interactive electronics, installations, and audio-visual works.

Website: hongshuofan.com

Twitter: @HongshuoFan

Programme Note

Metamorphosis is a real-time interactive audio-visual composition for one human performer and two artificial intellectual performers. Three performers will start by playing the same virtual ancient Chinese percussion instrument: Bianqing (磬). Then, by learning, imitating, having confrontation and cooperation with each other, the shape and sound of this instrument will evolve gradually and the performers themselves. From ancient to modern, concrete to abstract, the fusion of sound, image and live performance create an immersive experience exploring the dramatic shift and co-evolution between human and AI.