



# The Role of Art in Advanced Technology

18 February 2022

9.00 - 12.45 (France) | 17.00 - 20.45 (Japan)

*Online | In English*

Registration: <https://forms.gle/AZcFHcrWgArALpJKA>

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The world is changing rapidly with technology. One of the latest technologies to drive such changes would be Artificial Intelligence (AI). The progress of AI is accelerating day by day and has already surpassed human capabilities in various areas. However, on the other hand, it seems that society is not yet ready to accept such rapidly accelerating technology. Under such circumstances, art is attracting attention to foresee the changes caused by advanced technology and make them understandable to people. In this symposium, titled "The Role of Art in Advanced Technology" we will have presentations and discussions by artists creating artworks using advanced technology and by researchers who are thinking about the relationship between advanced technology and art.

# Programme

9.00 | Opening Remarks

**Jean-Yves Iatrides** (Air Liquide)

**Sébastien Lechevalier** (FFJ-EHESS)

**Yosuke Takenouchi** (Japanese Embassy in Paris)

9.10 | An overview of AI and Art

**Koichiro Eto** (2021 FFJ-Air Liquide fellow)

9.40 | Session 1

**AI as Alternative Intelligence and Human Creativity in Music. Case Studies in 2015 – 2021**

**Nao Tokui** (Keio University)

**Raising co-creativity in cyber-human musicianship**

**Gérard Assayag** (IRCAM)

**Mixing robotics, arts and health monitoring**

**Jean-Pierre Merlet** (INRIA)

10.40 | Discussion

10.50 | Intermission: Synthetic organisms

Movies: François Delarozière (Art Director), Scott Eaton (Artist)

11.10 | Session 2

**Augmented, virtual, double and digital humans: anthropological reflexions on imagination and creativity in robotics and AI**

**Lionel Obadia** (University of Lyon 2)

**Catalyze the future**

**Biin Shen** (Artist)

**Terra Numerica: Digital Sciences at your fingertips. Discover, Explore, Experiment!**

**Magali Martin-Mazauric** (INRIA)

12.10 | Discussion

12.40 | Concluding Remarks

# Introductions and chair

(alphabetical order)



**Koichiro Eto** (Senior researcher, AIST / 2021 FFJ-Air Liquide fellow)

Koichiro Eto is currently a senior researcher at the National Institute of Advanced Industrial Science and Technology (AIST). He got his Ph.D in the Information Science and Technology field at the University of Tokyo in 2010. As a media artist, he created several art works since the 1990s, including the permanent exhibit "A Hands-On Model of the Internet" at the National Museum of Emerging Science and Innovation. He launched NicoNicoGakkai Beta, a large-scale online research platform that connects public citizens and professional researchers (total 650,000 viewers). His research at AIST focuses on constructing services with user participation.



**Jean-Yves Iatrides** (Vice president, Air Liquide R&D Asia)

Since 2019, Jean-Yves Iatrides is Vice President Corporate Research and Development Asia. He is currently in charge of the Research and Development activity of Air Liquide group for Asia. He has been holding, within the Air Liquide group that he joined in 1987 as researcher after graduation from the french engineering school "Arts et Metiers", various positions from business to industrial operations in France, US and China. Through the development and promotion of industrial gases applications, he has been active in several industrial sectors ranging from glass to semiconductor manufacturing up to the use of hydrogen for mobility. Before coming back to Asia, in 2019, he was in charge of one of the largest industrial operations in France.



**Sébastien Lechevalier** (Professor, EHESS / President, Fondation France-Japon de l'EHESS)

Sébastien Lechevalier is an Economist and a Professor at EHESS (School of Advanced Studies in the Social Sciences, Paris), specialised in Japanese economy and Asian Capitalisms. He is also founder and president of the Fondation France-Japon de l'EHESS (FFJ). He has been a Visiting Professor at the University of Tokyo, Kyoto University, Hitotsubashi University, Waseda University and Doshisha University.



**Yosuke Takenouchi (Scientific Attaché, Embassy of Japan in France)**

Yosuke Takenouchi is Scientific Attaché at the Japanese Embassy in France since July 2019. He has been working at the Ministry of Education, Culture, Sports, Science & Technology (MEXT) of Japan especially in the field of promotion of science & technology and large-scale R&D. Just before his arrival to France, he was deputy-director at University-Industry Collaboration and Regional R&D Division at MEXT. He holds Bachelor and Master degrees in Engineering from Keio University and a Master degree in Public Affairs from Sciences Po Paris.

# Speakers

(alphabetical order)



**Gérard Assayag (Research Director, IRCAM)**

Gérard Assayag, an IRCAM research director, is head of IRCAM Music Representation Team, a team he has founded in 1992. He has been head of the IRCAM research lab (STMS, a joint lab between Ircam, CNRS and Sorbonne University) between 2011 and 2017. His research interests are centered on music representation issues, including programming languages, machine learning, constraint and visual programming, computational musicology, music modeling, and computer-assisted composition and interaction. He has designed with his collaborators OpenMusic and OMax, two music research software environments which have gained international reputation and are used in many places for computer assisted composition, analysis and improvisation.

**Title: Raising co-creativity in cyber-human musicianship**

Digital societies will see the development of deep interweaving between human creativity and autonomous information-processing capabilities of virtual and physical objects, that turn joint human-machine activity into a mixed reality with symbiotic interactions. In the cultural or industrial domains, co-creativity between humans and machines will bring about the emergence of distributed information structures of a new kind that will profoundly impact individual and collective human development. With technologies allowing one to extract semantic features from physical and human signals, combined with generative learning of high-level representations, we are beginning to unveil the increasing complexity of cooperation, synergy or conflicts inherent to cyber-human networks. These hybrid micro-societies will need renewed frames of thoughts and actions in order to be fully understood and managed. To this end the REACH project aims at understanding, modeling, and developing co-creativity between humans and machines in the musical domain through improvised interactions allowing musicians of any level of training to develop their skills and expand their individual and social creative potential. Indeed, improvisation is at the very heart of all human interactions, and music is a fertile ground for developing models and tools of creativity that can be generalized to other activities, as in music the constraints are among the strongest to conduct cooperative or competitive behaviors that come together into highly integrated courses of actions. REACH will study shared musicianship occurring at the intersection of the physical, human and digital spheres, as an archetype of distributed intelligence, and will produce powerful models and tools as vehicles to better understand and foster human creativity in a world where it becomes more and more intertwined with computation.



**Magali Martin-Mazauric (International partnerships officer, INRIA)**

Magali is currently "International partnerships officer" at the research center Inria d'Université Côte d'Azur in Sophia Antipolis. In 2002, she joined INRIA, the French National Institute for Research in Digital Science and Technology, as an assistant in the "Partnerships and Research Development Department". Motivated by the richness of cultural differences, she took the responsibility for international relations. Since 2010, she has been helping and supporting researchers in all aspects of their International and European collaborative projects to make them a success! She contributes to highlight the impact that these projects can have. At the same time, her taste for communication naturally led her to actively participate at the annual science

festival and to propose scientific mediation activities. In 2019, together with three research colleagues, she initiated the Terra Numerica project for the dissemination of digital science culture. Within the collective of Terra Numerica she has a great deal of versatility and multi-faceted expertise! (communication actions, partnerships, origami and spirals, art and science).

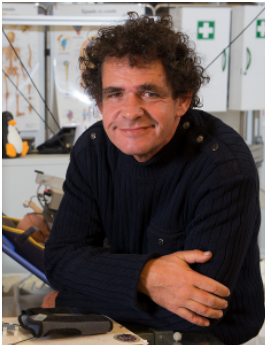
**Title: Terra Numerica: Digital Sciences at your fingertips. Discover, Explore, Experiment!**

Terra Numerica is part of the continuity of the projects already involved in the dissemination of digital science

culture, both in the Alpes-Maritimes and the Var.

It is a federative project emanating from the CNRS, INRIA and Université Côte d'Azur, bringing together the National Education and a large number of important partners and whose final objective is the creation of a "Cité du Numérique" in the south-east of France.

Terra Numerica's ambition is to create an original, attractive and unique facility for disseminating, sharing, meeting and enjoying each other's company: researchers, teacher-researchers, teachers, associations, manufacturers, students, the general public and citizens.



### Jean-Pierre Merlet (Research Director, INRIA)

Jean-Pierre Merlet currently works at the HEPHAISTOS, National Institute for Research in Computer Science and Control. He does research in Computing in Mathematics, Natural Science, Engineering and Medicine, Software Engineering and Electrical Engineering. His research interests focus on assistances robotics, assistive devices with subject health monitoring abilities and cable-driven parallel robots for patient transfert.

#### **Title: Mixing robotics, arts and health monitoring**

Although interdisciplinarity is mentioned at a governance level as an important factor for enriching sciences it is quite difficult to put it into practice. In this talk we will relate a successful experiment in which a robot is used both for an artistic exhibition and as an assistive device for frail people. This robot is based on the concept of cable-driven parallel robot where the translational degrees of freedom of the mobile platform are controlled by changing the lengths of 4 cables that connect the platform to the ground. In the artistic exhibition the robot is used as a large scale 3D printer while it may also be used to improve the mobility of frail people while monitoring this mobility and offering medical indicators to the medical community for assessing the state of health of the subject. We will describe how the knowledge resulting from the long-term exhibition has helped to improve the robot as an assistive device.



### Lionel Obadia (Professor, University of Lyon 2)

Lionel Obadia, professor (ex. class) in anthropology at the University of Lyon 2 (since 2004). Has taught at INALCO (1996-1997), EPHE (2001-2005), EHESS (2013-2014), Sciences Po Paris (since 2016) and CNAM (since 2019). Former director of the Doctoral School of SHS of the PRES of Lyon (2009-2014), fellow of the Institute of Advanced Studies of Strasbourg (2014-2016), and head of the department of SHS of the National Research Agency (2017-2021). An anthropologist of religions and globalization, he has conducted research on Western and then globalized Buddhism, health and belief systems in Nepal, Jewish messianisms, spiritual utopias in India. His latest work focuses on beliefs and digital technologies. He is the author of 180 publications, including 8 books in his own name, 7 co-edited books, 16 special issues

and 75 articles in peer-reviewed journals. Latest article on the topic: "Moral and financial economics of 'digital magic': Explorations of an opening field", *Social Compass*, 67 (4) 2020.

#### **Title: Augmented, virtual, double and digital humans: anthropological reflexions on imagination and creativity in robotics and AI**

The proliferation of human-like devices in the digital revolution and global expansion of AI. The presence of robots and AI is both a reality, a social and industrial project, and a driving force for cultural and ideological change. The discussion regarding the technologization or the I-zation of societies is nowadays burning topic, since futurism and transhumanism have nowadays infused all sectors of societies – even the less developed ones. And in every sector, there seems to be an ongoing tension between imagination and reason: science and technologies, on the one side, promote rationalist views on digitals, and aesthetics, humanities and arts, on the other, favour the expression of creativity and imagination. In between these two poles, there is a battlefield for "culture wars" between *technologists* (engineers and technicians), *technologists* ("prophets" of a "digital age" whatever the way they describe it) *technophilians* (developers and users fascinated by new technologies) *technophobians* (those who fear the developments). Rather than being strictly opposed one to each other, these four stances intermingle in a complex mosaic of representations, feelings and beliefs. The quick developments of robotics and AI in society arose key issues regarding ethics, acceptability, needs and desires of such "creatures": and more than any others, the human-like devices (flat conversational agents like



*digital humans* or robots, especially androids) crystallise intense fluxes of imagination, since they are virtuality and reality – and nourish art performance and philosophical debates.

On the grounds of a research, this paper will offer an anthropological glance on issue of the conceptual triangle between belief – imagination – devices. Beyond the common cultural features of a global technoculture stream bringing technologies in society but also cultural variations allowing for the expression of different “styles” or “aesthetic”, and examines some of the aspects of beliefs and imagination about “alternative humans” (mechanic gods, automats, robots) at the frontiers of humanity and rationality, fiction and realism, continuities and ruptures in history.



Biin Shen (Artist)

Biin Shen is an artist whose practice circulates between art, design, technology and social issues. She received her MA in design interactions, following her time with Professor Dunne & Raby at the Royal College of Art in London. In 2013, she was featured as the guest speaker for London Design Week to represent young Chinese creators. Her work has been exhibited in events/institutions worldwide, including Siggraph Asia, European Alternatives, TOKYOGALLERY+BTAP, Shanghai Expo, Beijing World Art Museum and more. In 2020, she was selected as the first and only media artist to represent China in the UNESCO Creative Cityproject. Since 2012, she has used her creative practice to participate in debates about issues that are of increasing urgency today. Besides her installations, curation has become one of

the mediums within her practice; she has also been writing for art/public media platforms to share her unique thoughts on the relationship between technology and humanity.

Title: Catalyze the future

In the society of 21<sup>st</sup> century, how can art inspire people to reshape human mindsets and perspectives, when facing the complexity and transboundary nature of knowledge that arising from the iterations of technology? Assuming that the future is not mapped but created, do we need a space like Foucault's 'heterotopia', where the social, cultural, economic and ethical implications of emerging technologies and its trends would be explored through artistic perceptions? By sharing a few artworks, the speaker hopes to open up a discussion between technology and humanity in an alternative view, and attempt to provoke new thoughts of unfolding emerging technologies with the possibilities of reframing and understanding the human future.



Nao Tokui (Artist / Researcher, Founder & CEO, Qosmo Inc. / Associate Professor, Keio University / Dentsu Craft Tokyo, Head of Technology)

Nao Tokui is an artist, researcher, and associate professor at Keio University. Tokui received his Ph.D. from The University of Tokyo on his research on Human-Computer Interaction and Artificial Intelligence (AI). While pursuing his Ph.D., he released his first album and collaborated with Nujabes, a legendary Japanese hip-hop producer. He has been exploring the potential expansion of human creativity through the use of AI. His recent works include a collaboration with Brian Eno and AI DJ Project, where a Machine Learning-based DJ plays alongside a human DJ (Tokui, himself), taking turns

selecting and playing one song at a time. His works have been exhibited at New York MoMA, Barbican Centre (London), and InterCommunication Center (Tokyo), and more. In April 2019, he started his professorship at Keio University and founded Computational Creativity Lab to advance his practices in research and educational environment as well. He published his first book on AI and Creativity in January 2021.

**Title: AI as Alternative Intelligence and Human Creativity in Music. Case Studies in 2015 – 2021**

How can we use AI to enhance our creativity? Can AI itself be creative? By illustrating the process of realizing my own AI music projects, I propose how we can embrace the "mistakes" of AI or "misuse" AI to create something new, surprising, and valuable.