Human to Artificial (H2A)

from Duets with Robot to a New Model of Relationship

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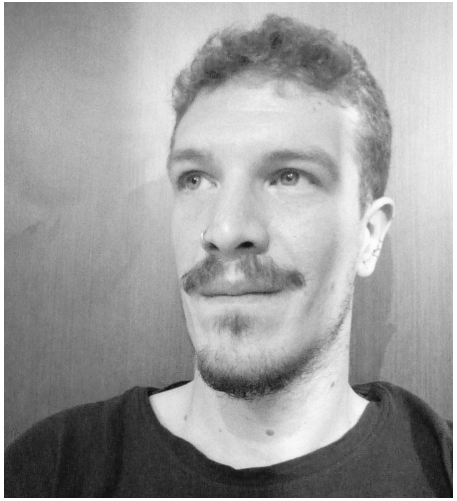
Presenter's resume

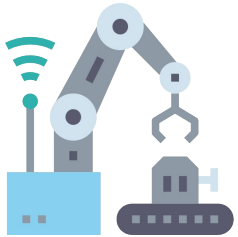
Alessandro Ianniello, class 1991, born and raised in Milan, Italy. He graduated at Politecnico di Milano in Product Design and then he got his master degree in Product Design for Innovation. After the graduation he started working as a tutor for two courses at Polimi and as a research fellow for UPO Simnova, an interdepartmental laboratory of the Novara faculty of medicine. He is a member of EDME interdepartmental laboratory research group of Polimi and a PhD student. He is developing a research that investigates the potential role of imagination in shaping transition towards sustainable and responsible future.



The research

Introduction

Discovering New Human-Technology Relationships



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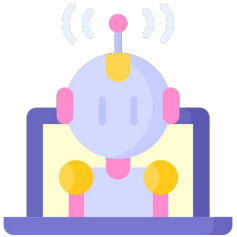

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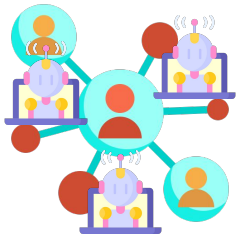


SOCIETY 5.0

Introduction

Design and Creativity

Two concepts prove to be fundamental to hypothesize and describe new possible forms of interaction between human beings and 4.0 technologies: **design and creativity**.

In design and in the design process, it is recognized the ability to **conceive and conceptualize new ways of use and relationship with technologies**.

Creativity and the creative process are instead a stimulus for the **construction of disruptive interconnections between human capabilities and artificial faculties**, which can be a source to develop these relationships.

Musical creativity meets innovation, generating an experience that, interpreted by design, allows to outline the distinctive features of a **new approach** between people and technology.

Art and industry 4.0

New Influences

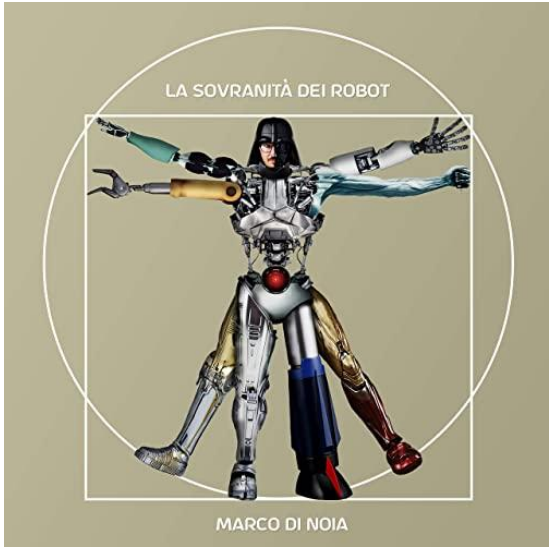
The song “Daddy’s Car” is both a great example of interaction between man and Industry 4.0 technologies, and the source for different questions: **are they a tool to help artists or an artificial alternative to them? Or neither of them?**

Creativity and creative process, guided by a design mindset, could solve this questions, leading to new ways of perceiving some technologies, neither tools nor a replacements, but participants themselves in the process.

So, **how can these technologies contribute in the artistic process,** acting as cooperative actors for its development?

Case Study

"La Sovranità dei Robot", music EP

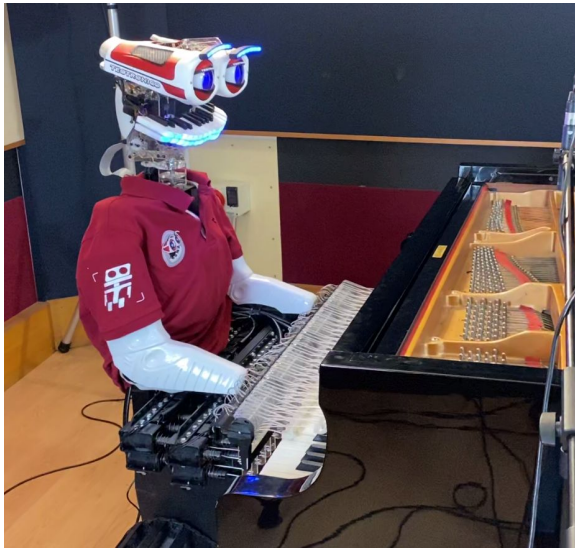


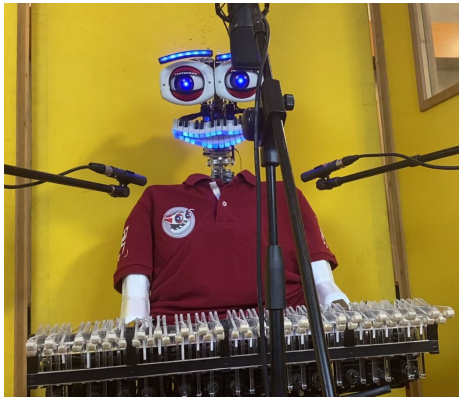
"La Sovranità dei Robot" (The Sovereignty of Robots) is a music EP enriched with some pioneering elements and audio experiences:

- the recording of the robot **TeoTronico**, conceived by the Italian Matteo Suzzi, **which plays the piano** in one of the tracks;
- the recording of the robot **iCub**, created by the Istituto Italiano di Tecnologia, **that reads a poem** as the last track of the EP;
- an **audio morphing** experiment.

Duet with Robots

TeoTronico' Experience





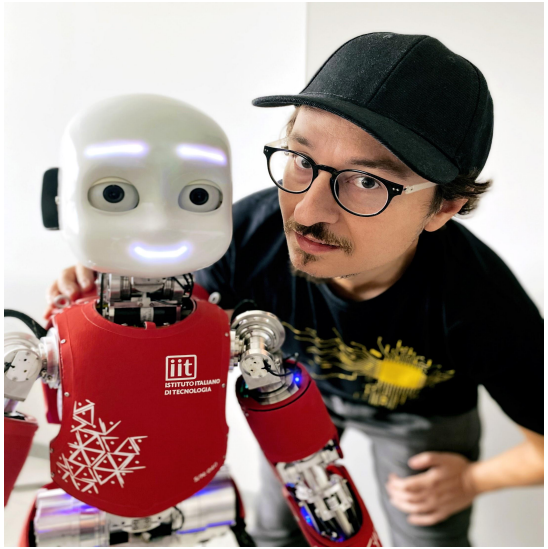
Pictures of the recording session of TeoTronico, taken by Marco Di Noia.

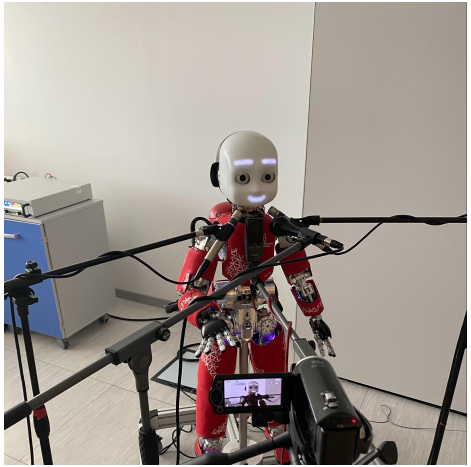
Cue 1: Exposed to the same task and activity, robots could **act in slightly different ways**, because of variations in the environment, or due to minor instabilities within their system.

Cue 2: The facial expressions of the robot helped the listeners in **not perceiving it as artificial**.

Duet with Robots

iCub's Experience





Marco Di Noia with iCub, and the robot engaged in the recording.

Cue 3: After the activation of robot's arms, legs, and mouth the singer's **interaction** with the robot became **richer and warmer**.

A third experiment

Audio Morphing

The EP includes a third experiment, which doesn't feature real robots, but it is inspired by fictional robots: replicants.

One song is enriched with the digital replicas of two human musicians, who were asked to write and record their parts and send the scores to the team, to generate MIDI files. Thus, **the engineers recreated the** two musicians' **sound**, using **virtual instruments and audio editing software**.

Finally, they made a **morphing** of the real registrations and the virtual ones to have "sound replicants" to confuse the listeners' perception.

The software used by sound engineers to reproduce the playing of the two musicians

Artificial to Human

New Concept of Relationship

When robots are involved as co-performers or co-artists, they can succeed in creating a relationship with humans that can **move beyond the master-slave paradigm**.

If we analyze the relationship in the direction that moves from artificial to human is easy to define its foundations with the concept of **human friendship**, conceived as the **grade of reliability and believability** a robot should have.

Human to Artificial

New Concept of Relationship

By taking into account the direction human to artificial, and, thus, addressing what we need to do in order to facilitate this new relation, some concepts become fundamental.

We must acknowledge the importance of **constant updates** within the domains regarding technologies. We must not fear them, but always try to convert into **opportunities** what we first saw as a threat.

This should be the approach that guide us in this relationship, because it implies the need for **continuative learning and updating**.

Conclusion

Next Steps and Open Questions

We understood the importance of **creative mindsets** to approach new and disruptive technologies, which should become something more than just instruments and **participate in the process of co-creation**.

We highlighted the need for a **new model of relationship** between humans and artificial, which seeks to be more inclusive and “friendly”.

We tried to stress the importance of a even more thriven **collaboration** between engineerings and design in order to develop suitable methodologies to address the incoming technological changes.

What are the robots’ characteristics that are contributing to change the way in which we consider them?

In which way can we develop a new model of relationship between us and artificial?

How can design contribute to this discourse?

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Thanks for the attention!