



#ArtAboutAI

The First Pieces

A digital exhibit by Dr. Lydia Kostopoulos



#ArtAboutAI is an avant-garde attempt to make artificial intelligence more accessible for an informed civic debate.

Dr. Kostopoulos's background in national security and education lends a fresh perspective to her art work with references to controversial ethical debates about artificial intelligence.

One of her key motivators is to raise awareness about artificial intelligence and provoke an intentional and thoughtful discussion about what it is, and what it means for society and humanity as a whole.

Her art is informed by the latest technological developments in artificial intelligence as well as her involvement in national security and policy related work.



Dr. Lydia Kostopoulos' multi-disciplinary work lies in the intersection of people, strategy, technology, education, and national security. Her professional experience spans three continents, several countries and multi-cultural environments.

She has taught in several institutions, most recently at the National Defense University and at the Joint Special Operations University where she lectured on emerging technologies.

Pursuing her many interests with rigor has led her to study several European languages; design a collection of functional suits with professional women's needs at the center under her trademarked label 'Empowering Workwear by Lydia' lead sketching sessions at the Smithsonian American Art Museum; and make her own original art featured in this digital exhibit about artificial intelligence to raise awareness about the technology.



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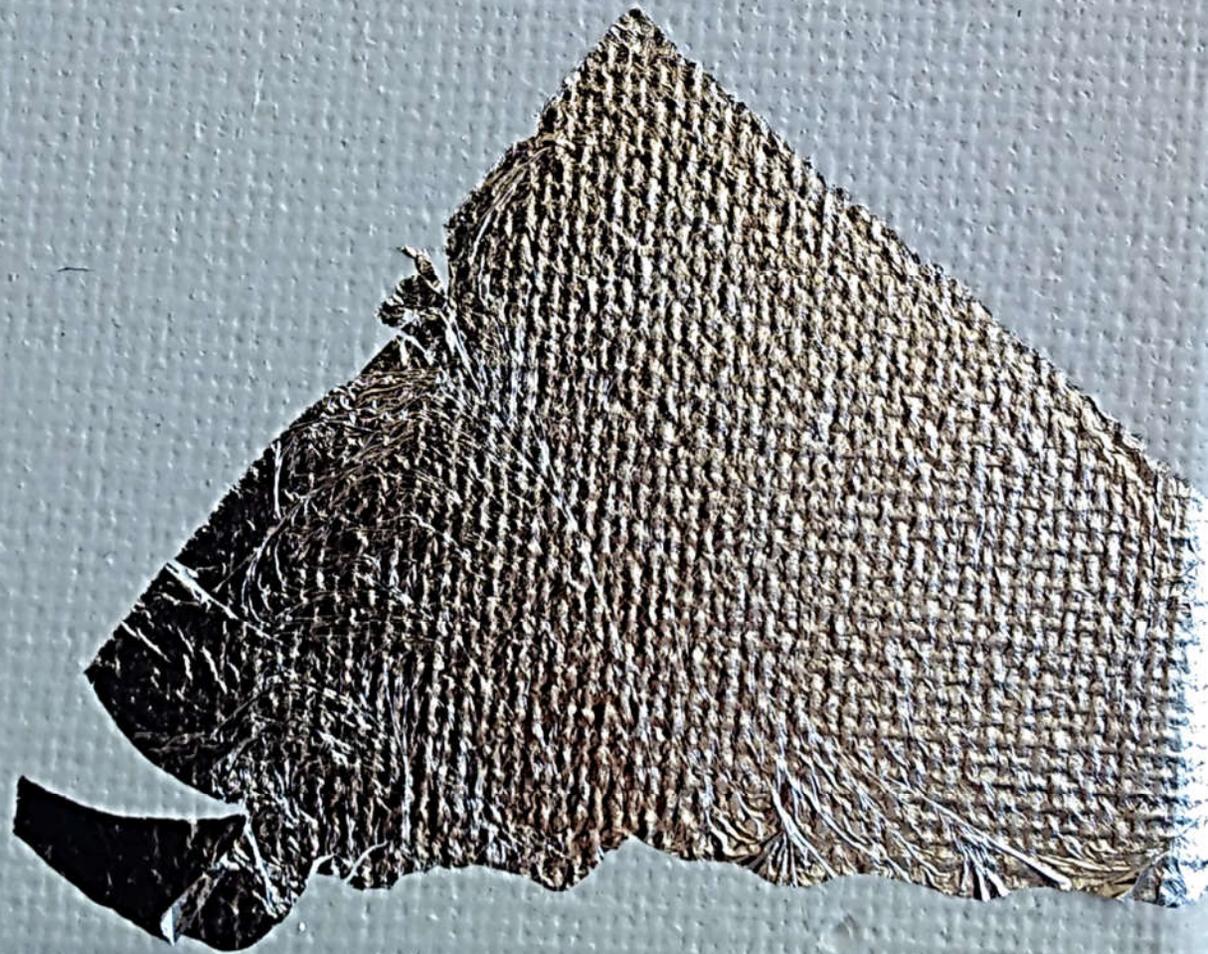


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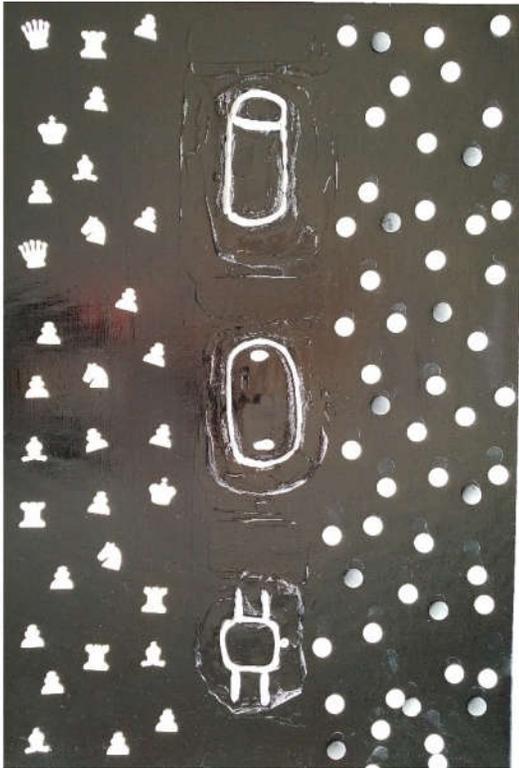


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Welcome to the
Digital Exhibit!



The AI Triptych



“AI Today”
Artificial Narrow Intelligence (ANI)

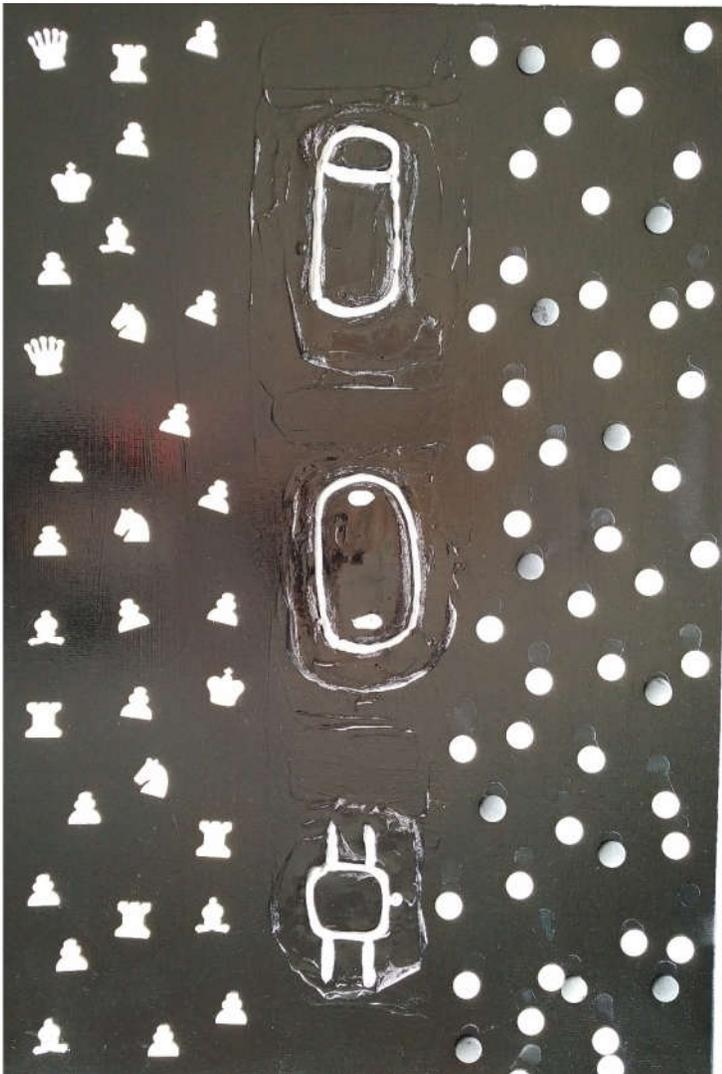


“One Human Brain”
Artificial General Intelligence (AGI)



“Intelligence Explosion”
Artificial Super Intelligence (ASI)

AI Today



All of the artificial intelligence that exists today falls in the category of Artificial Narrow Intelligence (ANI). This piece represents important public moments of AI (Left and Right) and its most prominent public use (Middle).

Left: In 1997 IBM's Deep Blue AI beat the world champion in chess.

Right: In 2015 Google DeepMind's AlphaGo beat a human professional player at GO which is significantly harder than chess. The AI was able to learn by playing the game by itself and with humans.

Middle: In reference to the ANI commonly used today Amazon Alexa/Google Home (top), mobile phone AI such as Siri, Cortana and OK Google (middle), and smart watches such as Fitbit and iWatch (bottom)

Acrylic paint, spray paint, laser cut plastic, melamine, and wax on 24x36" canvas



Glow in the Dark Elements:
Chess pieces, Go pieces, and devices in the center.

One Human Brain



When artificial intelligence is equivalent to one human brain in its cognitive abilities, in the sense that it would be able to be creative, funny, smart, emotive and reason as humans do, then it will have achieved Artificial General Intelligence (AGI).

This piece expresses this through a rigid outline of a figurative robot of the common imagination and has a 3D brain in the middle of the head of a robot to show the human-robot merger.

Acrylic paint, spray paint, silver leaf, plastic, and wax on 24x36" canvas



Glow in the Dark Elements:
The Brain illuminates in the dark,
highlighting what AGI means.

Intelligence Explosion



It is said that once artificial general intelligence is achieved, there will be a rapid exponential growth in intelligence resulting in an 'Intelligence Explosion', or Artificial Super Intelligence (ASI). This type of intelligence would be equal to (and with time greater than) the intelligence of all of the human race combined.

It is this particular type of artificial intelligence that leading scientists such as Stephen Hawking and entrepreneurs such as Elon Musk warn the public about.

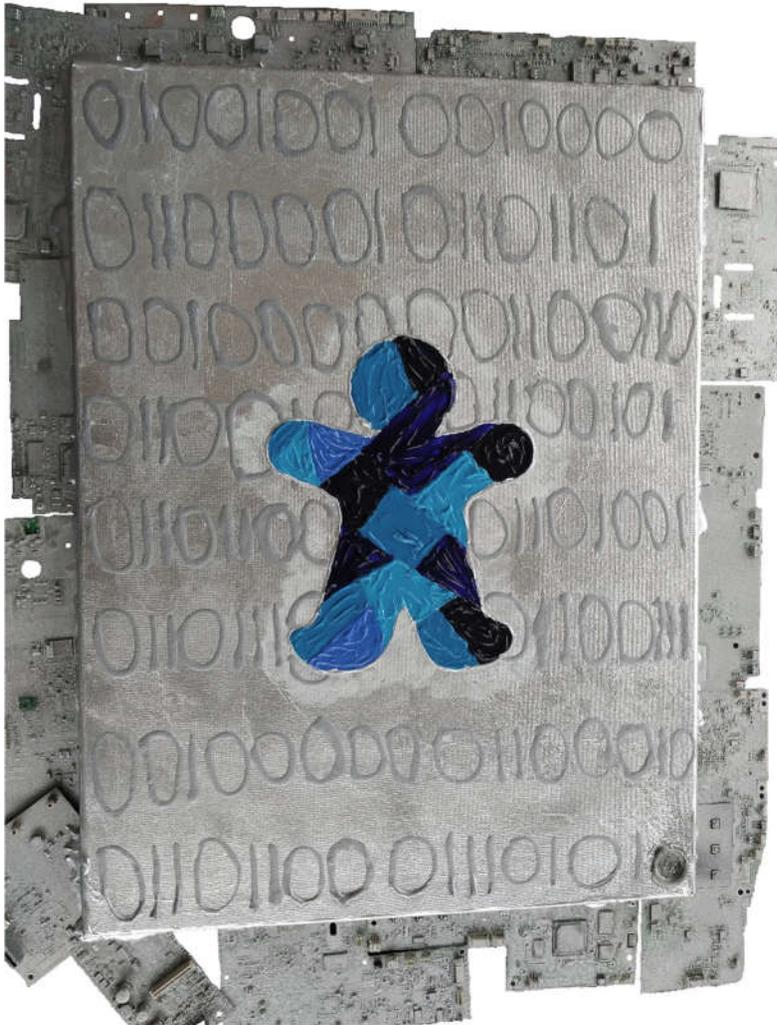
Acrylic paint, spray paint, and wax on 24x36" canvas



Glow in the Dark Elements:

The explosion illuminates in the dark, almost as if to suggest, that is all that remained.

“I’m Feeling Blue”



In reference to the expression “*I’m feeling blue*”. This piece contrasts the socio-cultural understanding of the color blue with regards to emotion and the literal understanding of the color by a machine algorithm. The human emotion of ‘*feeling blue*’ is at the center, where the AI processes many shades of blue represented in the human outline. This AI interpretation is done at the software level with ones and zeros, which traverses through physical hardware, represented by the silver paint dripping from the binary level to the hardware frame. The ones and zeroes in the background say “*I’m feeling blue*”.

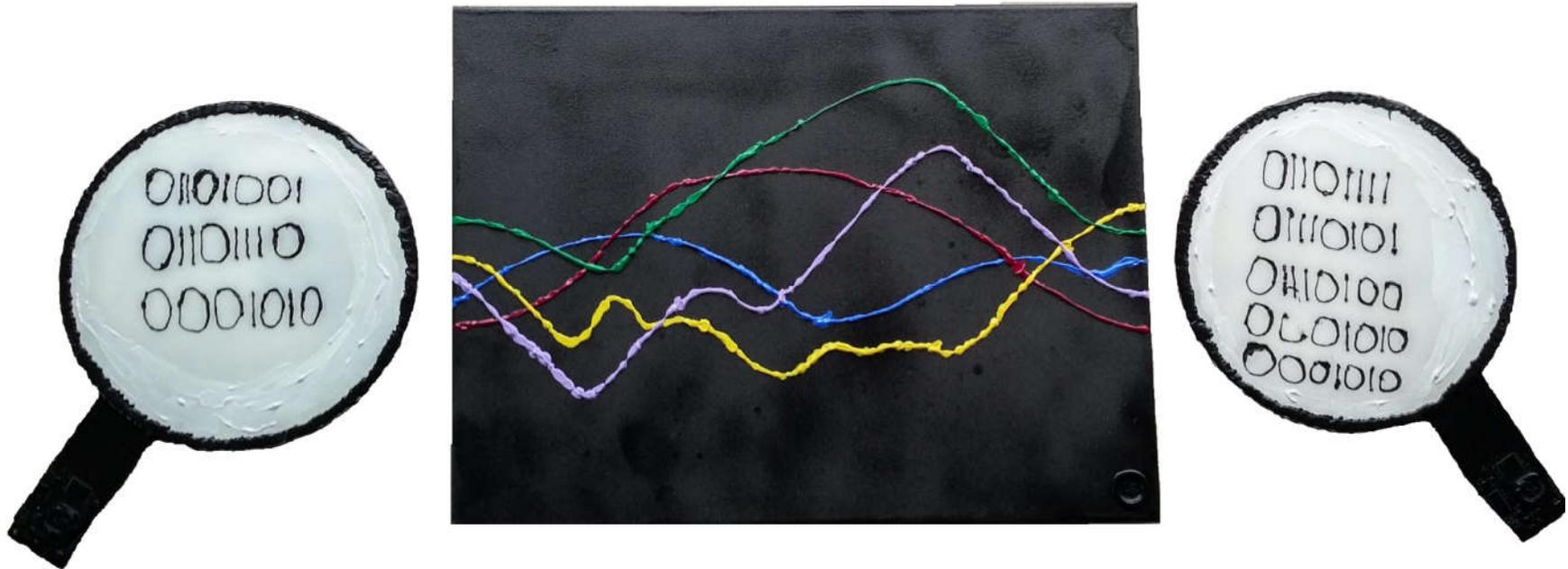
Acrylic paint, silver leaf, spray paint, motherboards and wax on 18x24” canvas

Glow in the Dark Elements:



In the dark, only the outline of the human illuminates in the center, suggesting that it is the human element that should not be forgotten as AI technological progress is made.

“The Magic in Between”



A visual representation of the black box of machine learning. The magnifying glass on the left says “in” in binary and the one on the right says “out” to represent the ability to examine the data put into machine learning environments, and the data that comes out. The middle represents the black box of machine learning where all kinds of connections and patterns are being made, that are not always explainable to those who created the algorithm.

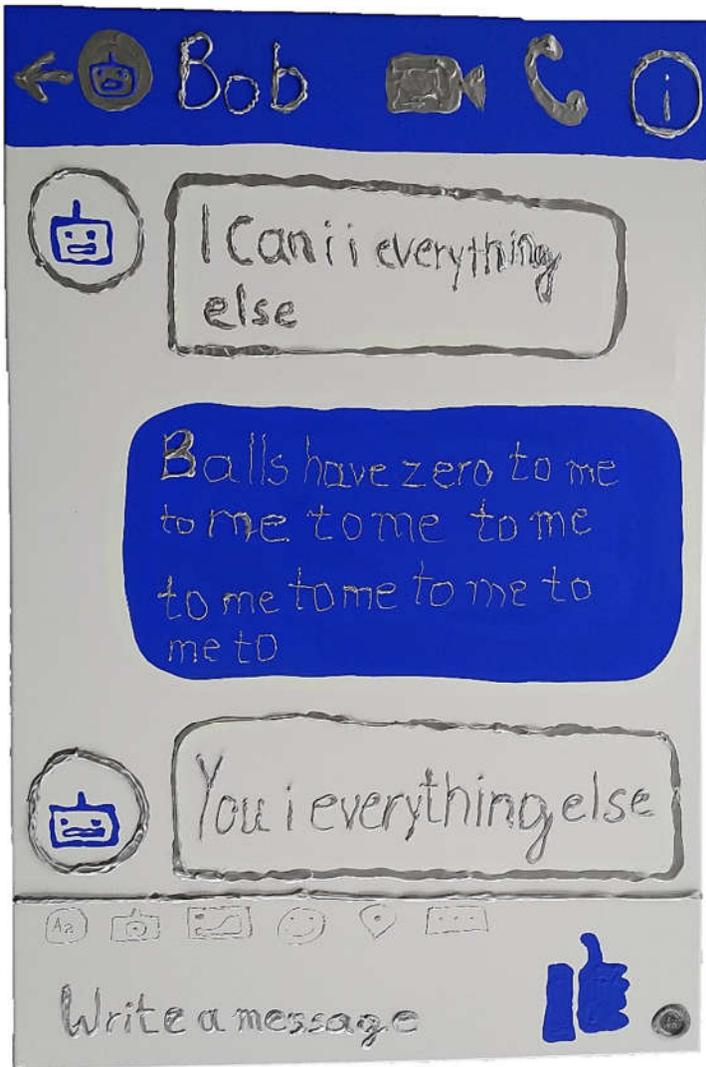
Acrylic paint, spray paint and wax on 18x24” canvas
Acrylic paint, spray paint, motherboards and wax on 12” diameter round canvas



Glow in the Dark Elements:

The magnifying glass rim glows to illuminate the data that is visible, transparent and examinable.

Alice's FB Messenger



Framed inside a Facebook messenger conversation, this piece shows part of an actual conversation between FB artificial intelligence algorithms Alice and Bob in a Facebook experiment on collaboration.

The intent of the 2017 research was to have chatbots that could negotiate with humans in a way where the user would not realize they were chatting with a bot.

The experiment asked the AIs (Alice and Bob) to divide books, hats and balls in a mutually agreeable way. When Alice and Bob started communicating in their own language they stopped the experiment as they realized they did not incentivize the bots to communicate according to human rules of the English language.

The text in the art piece was pulled straight out of the experiment transcript of Alice and Bob's exchange.

Acrylic paint, spray paint, and wax on 24x36" canvas



Glow in the Dark Elements:

In the dark, the text boxes glow to highlight the importance of the back and forth autonomous communication.

Adversarial AI

Adversarial machine learning is a research field that lies at the intersection of machine learning and computer security. It aims to enable the safe adoption of machine learning techniques in adversarial settings like spam filtering, malware detection and biometric recognition.

Turtle Rifle



This piece is inspired by the 2017 research conducted at MIT's LabSix where they were able to confuse Google's InceptionV3 image classifier into believing that their 3D printed turtle was a rifle. This type of adversarial AI and spoofing has implications for autonomous weapons systems, military deception tactics, and implies an advantage for asymmetrical actors.

Acrylic paint, glass rhinestones, plastic rhinestones, and wax on 18x24" canvas

Acrylic paint, spray paint, and roped ribbon on 18x24" canvas - backside



Glow in the Dark Elements:
In the dark the outline of the turtle illuminates as well as the target lens around it.

Graffiti Confusion



This piece is inspired by a similar stop sign used in a 2018 collaborative research paper on Robust Physical Perturbations by four universities (University of Michigan Ann Arbor, University of Washington, University of California Berkeley, and Stony Brook University). Adding graffiti to stop signs they demonstrated that visual adversarial perturbations can cause misclassification on the part of the artificial intelligence.

Their research serves as a proof of concept that simple graffiti on signs can have serious implications for autonomous vehicle understanding of its environment, implying a second order effects regarding the safety of passengers and pedestrians.

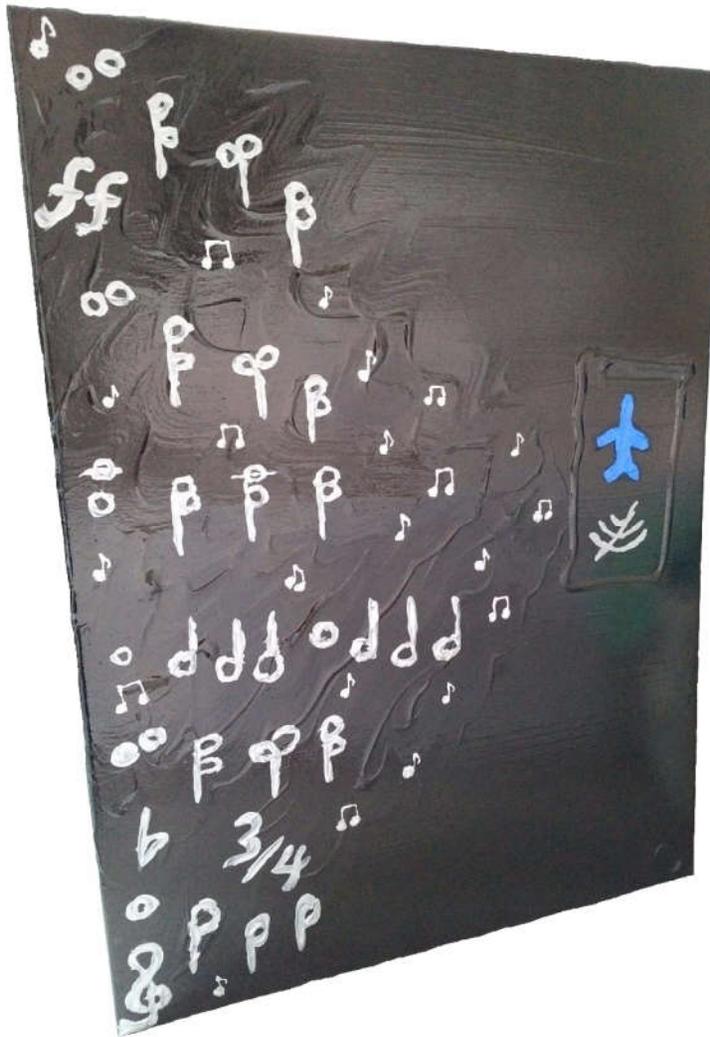
Acrylic paint, melamine, and wax
on 18x18" plastic stop sign



Glow in the Dark Elements:

In the dark the GO pieces illuminate the words LOVE and HATE to highlight the part of the stop sign that confused the autonomous vehicle AI.

Commanding Music



In 2016 researchers at the University of California, Berkeley successfully hacked into Apple's Siri, Amazon's Alexa and Google's Assistant through hidden sounds inaudible to the human ear.

This piece represents that using musical notes from the initial STAB of "*O Fortuna*" as the audible music and musical notes with glass rhinestones as the inaudible commands, imbedded within the song.

The medieval Latin Goliardic poem written early in the 13th century, "*O Fortuna*" was chosen as it is a complaint about "the inexorable fate that rules both gods and men in Roman and Greek mythology."

This song is used in this piece as an analogy to the potentially inexorable fate of 'man and machine'.

Acrylic paint, glass rhinestones,
and wax on 18x24" canvas

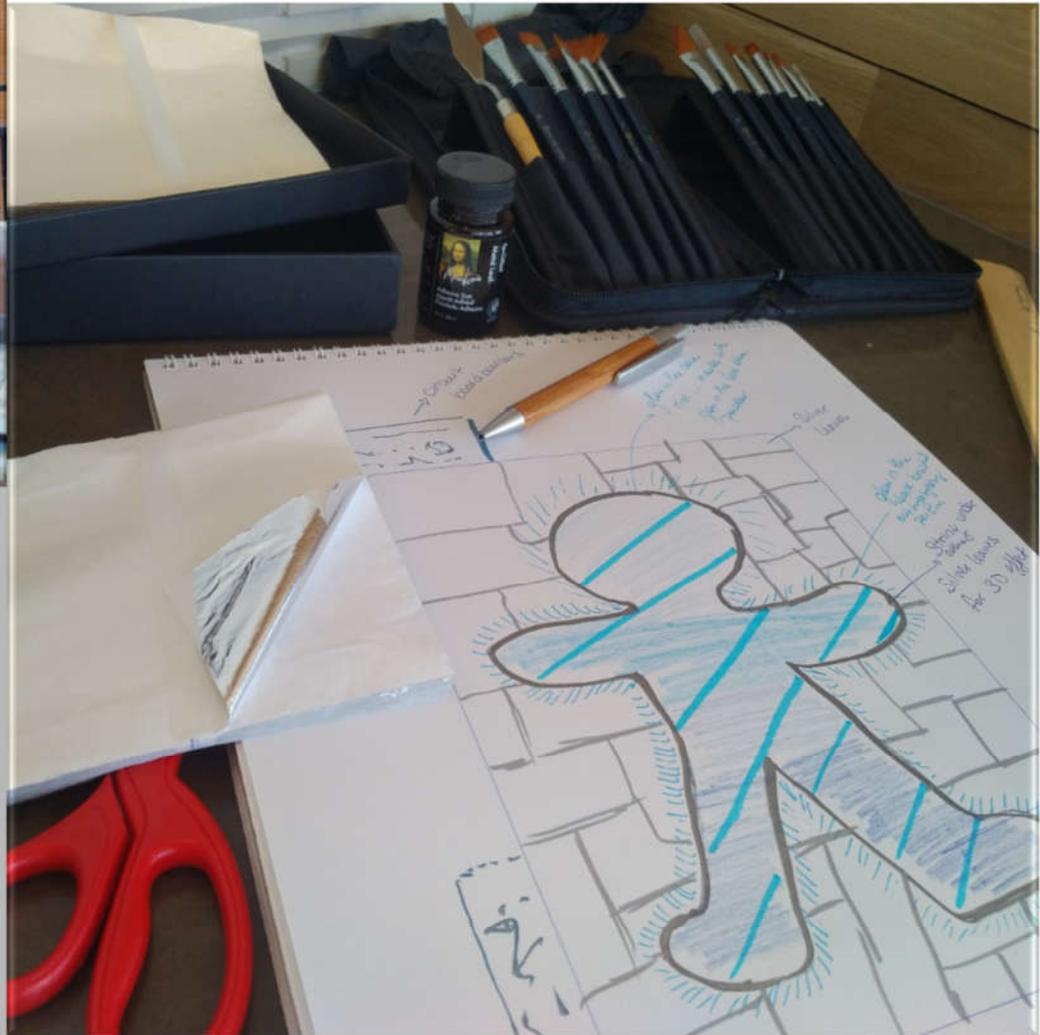
Glow in the Dark Elements:

The inaudible musical notes which represent adversarial commands illuminate in the dark, as well as the plane and Wi-Fi symbol.





Behind the scenes:
In the making of
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