Is AI a Friend or a Foe?

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What is machine learning (ML)?

Image source: https://www.akc.org/expert-advice/training/how-to-become-a-dog-trainer/

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What is artificial intelligence (AI)?

Computer

Human

Interrogator

What is artificial intelligence (AI)?

Image source: https://spectrum.ieee.org/how-ibms-deep-blue-beat-world-champion-chess-player-garry-kasparov
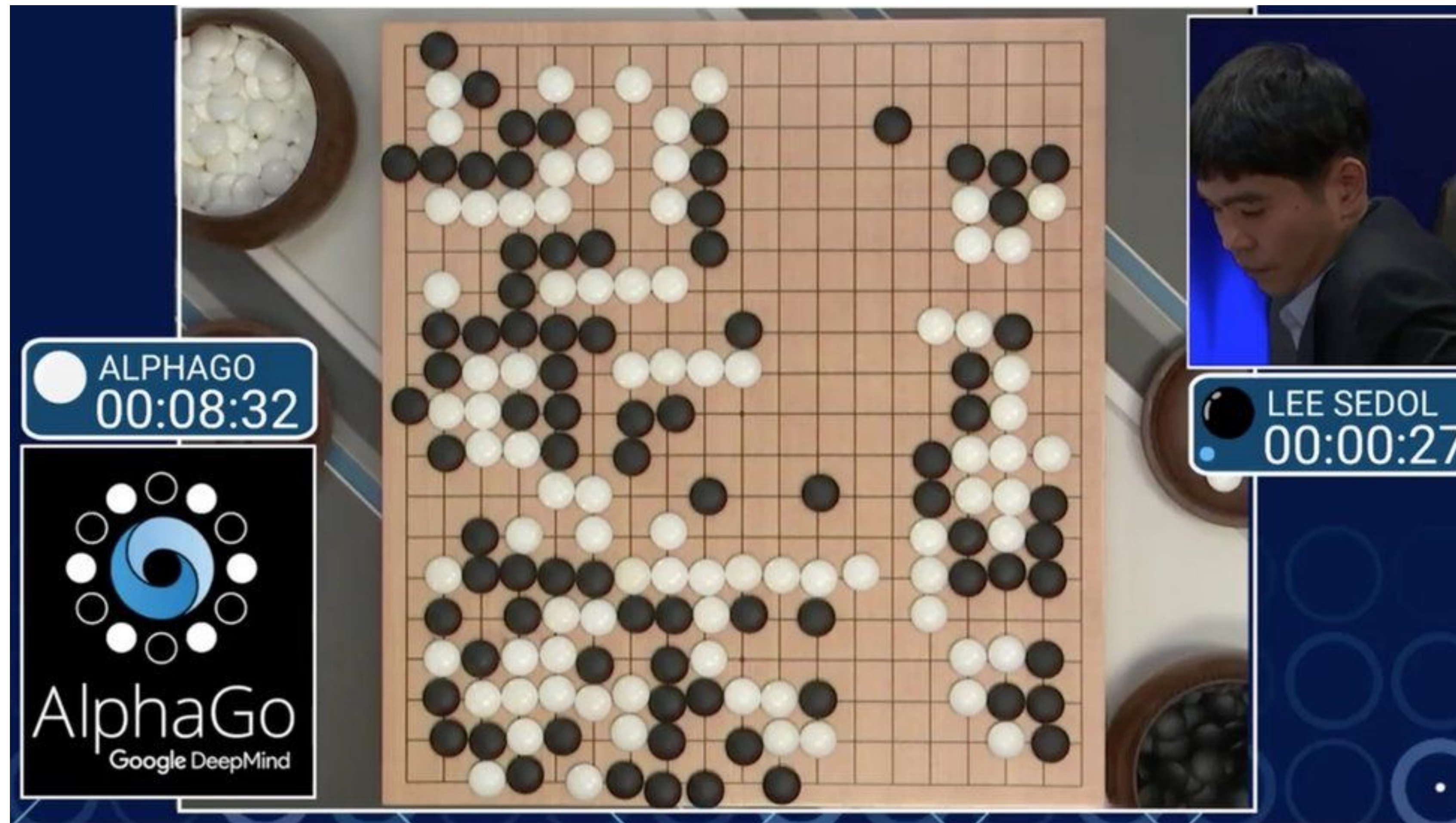
What is artificial intelligence (AI)?

Image source: https://www.bbc.com/news/technology-35785875

What is artificial intelligence (AI)?

Image source: https://www.nytimes.com/2011/02/17/science/17jeopardy-watson.html
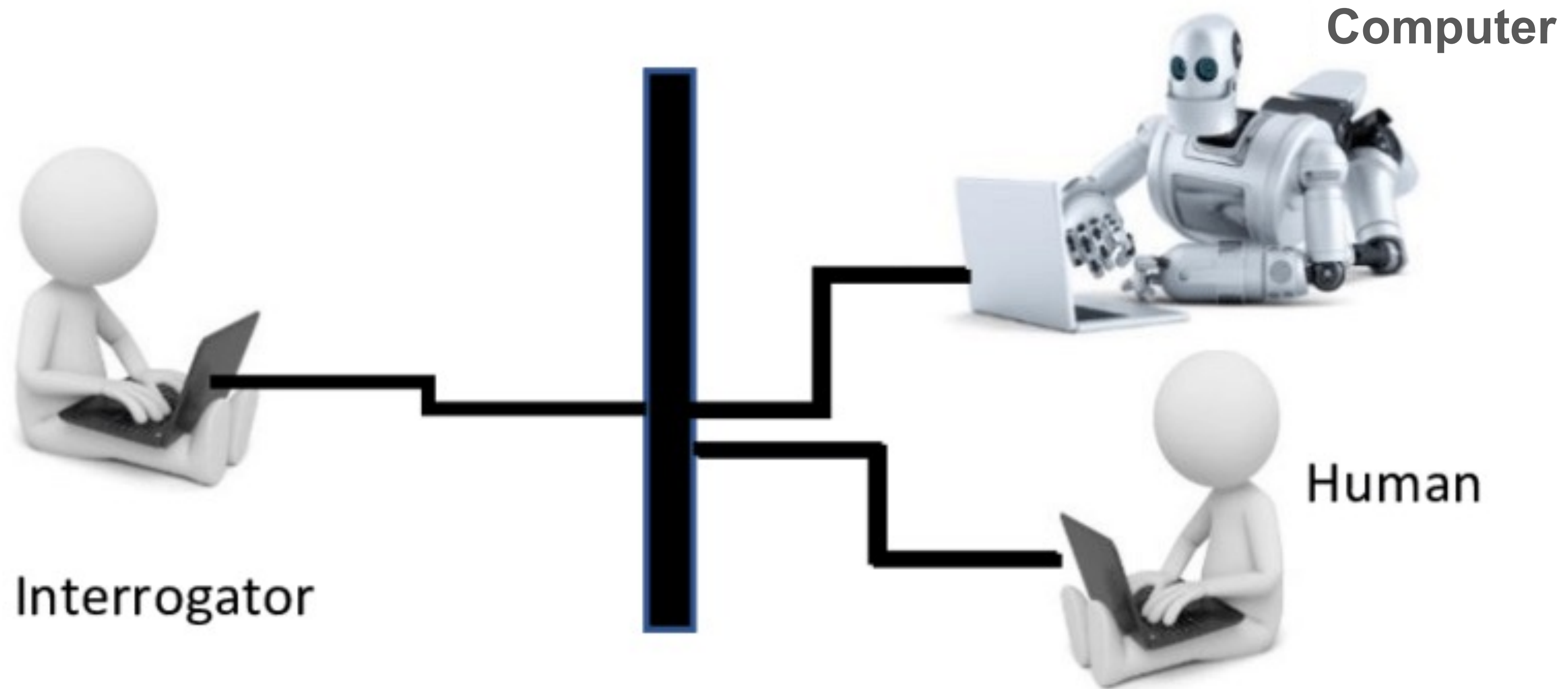
What is artificial intelligence (AI)?

Image source: https://upload.wikimedia.org/wikipedia/commons/5/54/DARPA_Challenge_RedTeam.jpg

What is artificial intelligence (AI)?

Image source: https://karpathy.github.io/2012/10/22/state-of-computer-vision/

Can we get accurate answers?

Image source: https://shelf.io/blog/the-it-leaders-guide-to-preparing-structured-and-unstructured-data-for-generative-ai/

Image Understanding

- AI can understand what objects are present in an image, with an accuracy that surpasses what was possible just 5 years ago.

- AI is also gaining increasing capability to track objects throughout a video sequence.
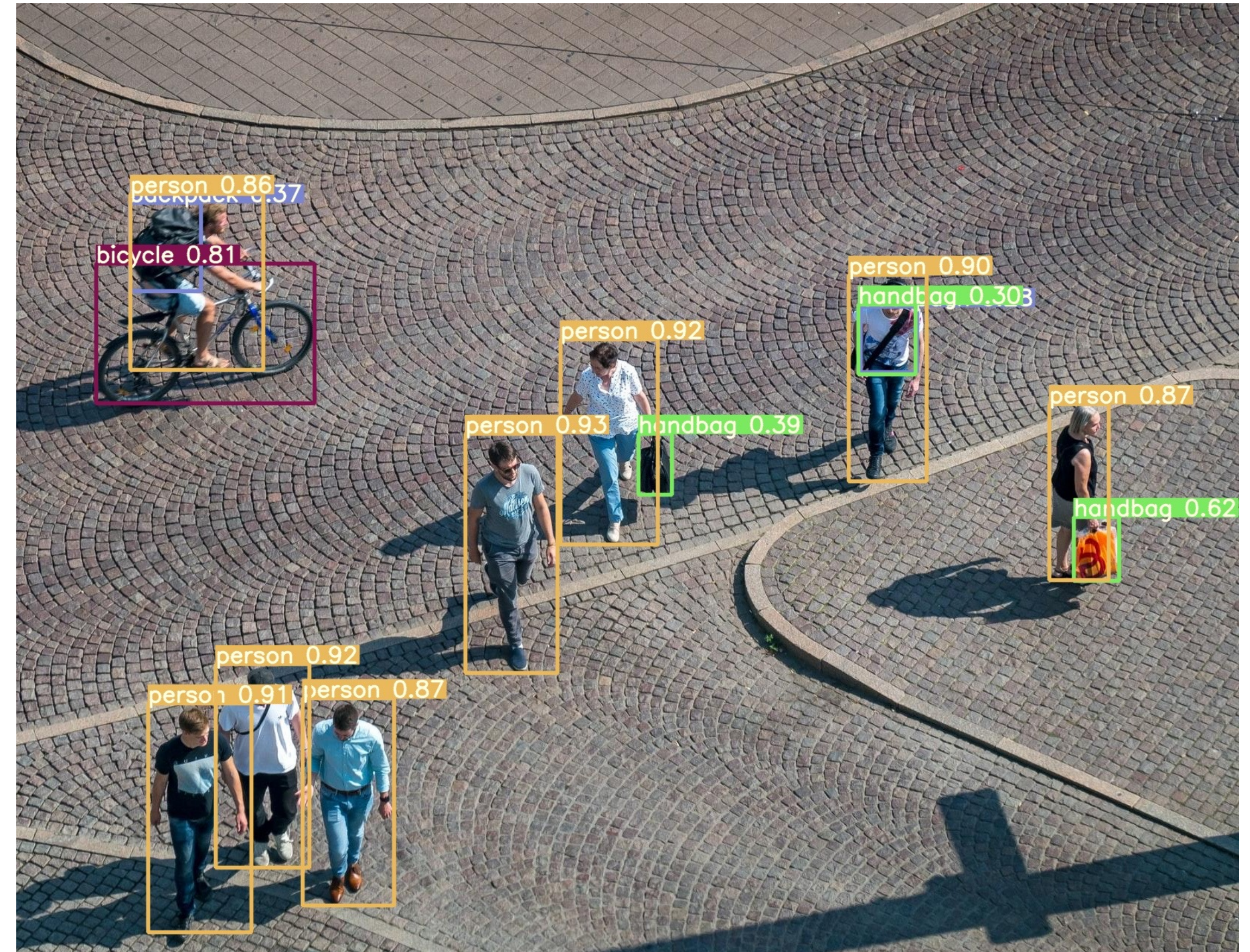

Image source: https://viso.ai/deep-learning/yolov7-guide/

Segment and Track Anything

Video source: https://segment-anything.com/

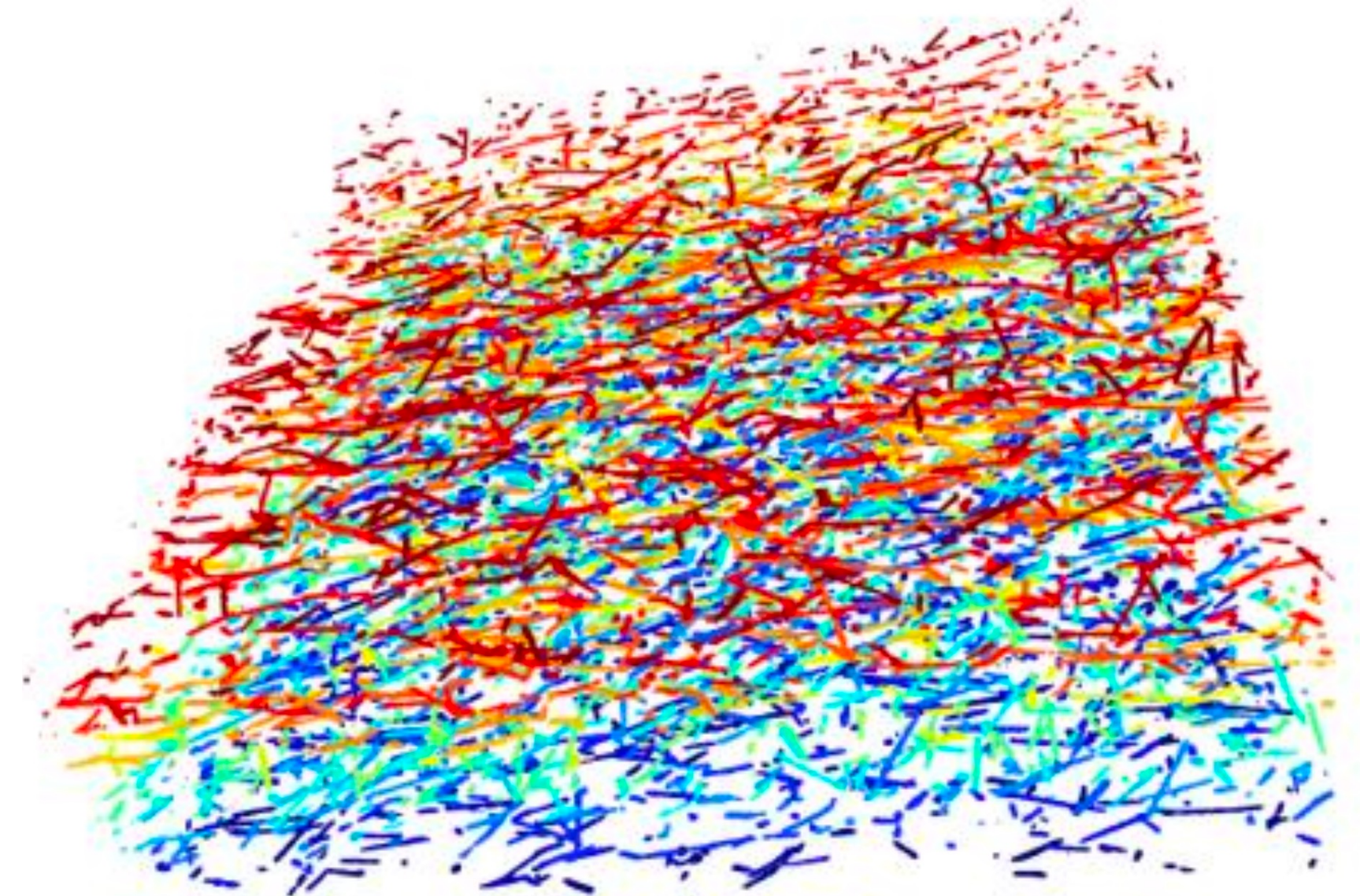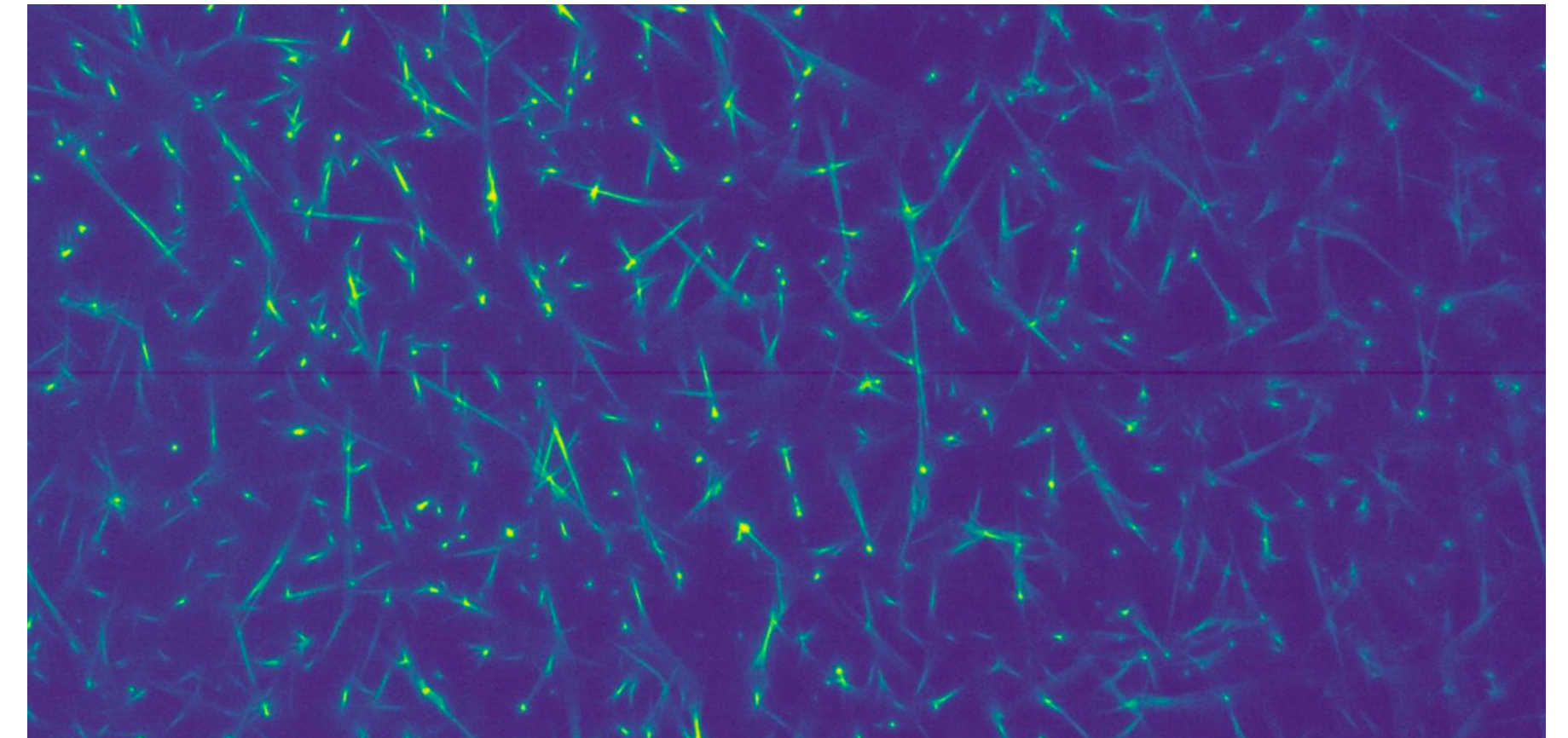Video source: https://github.com/z-x-yang/Segment-and-Track-Anything

Image Understanding

Ongoing Research at ECU

- Blood clot detection and analysis - Dr. Nathan Hudson

- Sperm analysis for infertility diagnostics - Dr. Cameron Schmidt

- Home-health care and monitoring -Dr. Kamran Sartipi

Radiance Fields

- AI can understand the underlying 3D geometry within images.
- By having a few photos of an object or scene…

Radiance Fields

- AI can understand the underlying 3D geometry within images.
- By having a few photos of an object or scene, it can generate the scene from any view.
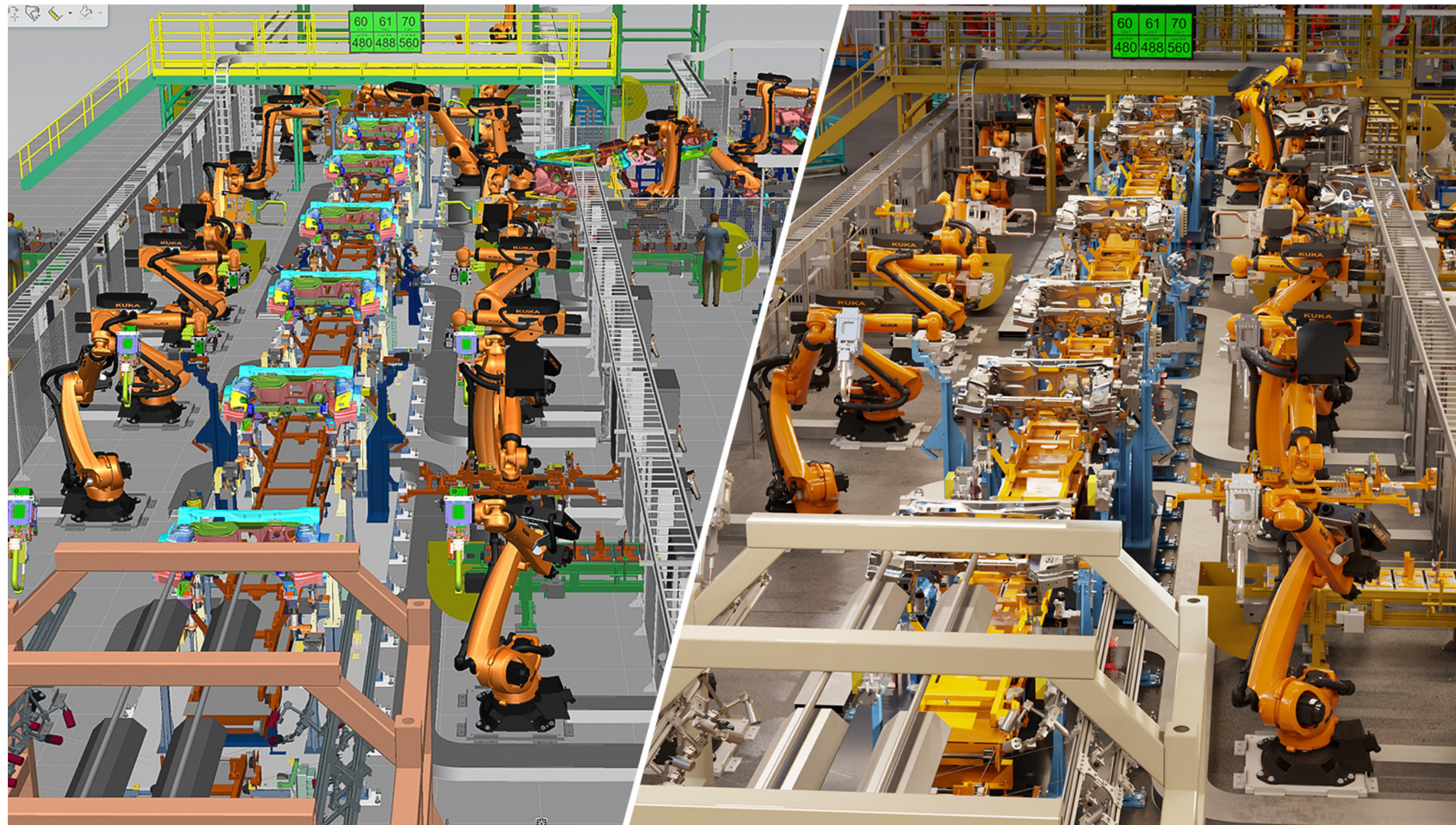

Video source: https://www.matthewtancik.com/nerf

Radiance Fields

Video source: https://repo-sam.inria.fr/fungraph/3d-gaussian-splatting/

The Era of AI in 3D graphics

NVIDIA's Digital Twin System

Image source: https://nvidianews.nvidia.com/news/siemens-and-nvidia-to-enable-industrial-metaverse

- Whether 3D meshes or radiance fields, AI is making it faster and easier than ever before to get real objects into the virtual world.

- These digital counterparts will continue to have applications in content creation, industrial design, and simulation.

The Era of AI in 3D graphics

NVIDIA's Digital Twin System
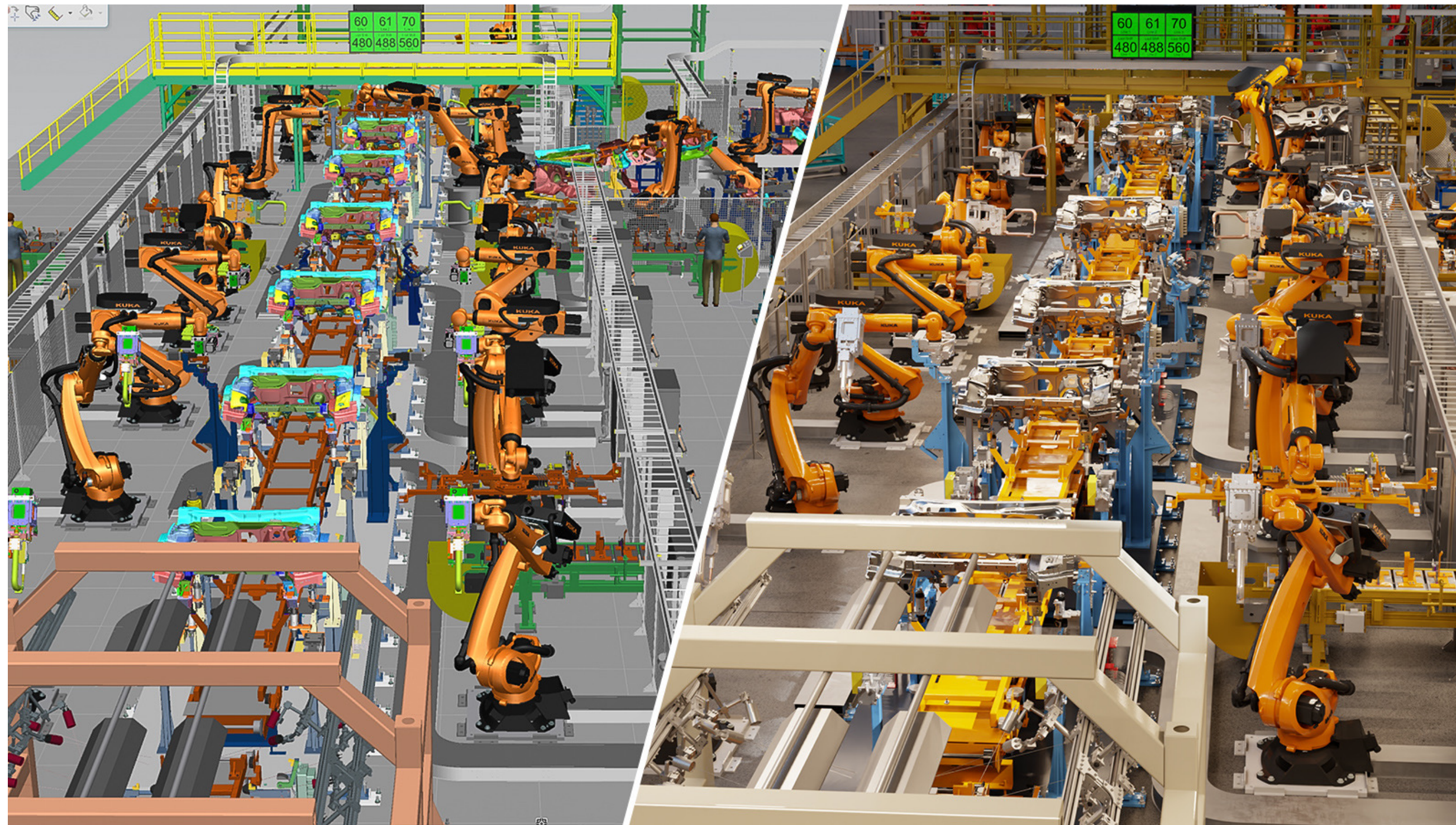
Image source: https://nvidianews.nvidia.com/news/siemens-and-nvidia-to-enable-industrial-metaverse

Ongoing Research at ECU

- Compression and editing of radiance fields

- Digital emergency response planning – Dr. Dylan Hardison

- VR for medical training and simulation – Dr. Rui Wu

Friend or Foe?

Image source: https://www.wsj.com/articles/tesla-blames-driver-in-fatal-car-crash-1523487100

Friend or Foe?

The automated car lacked "the capability to classify an object as a pedestrian unless that object was near a crosswalk," an NTSB report said.

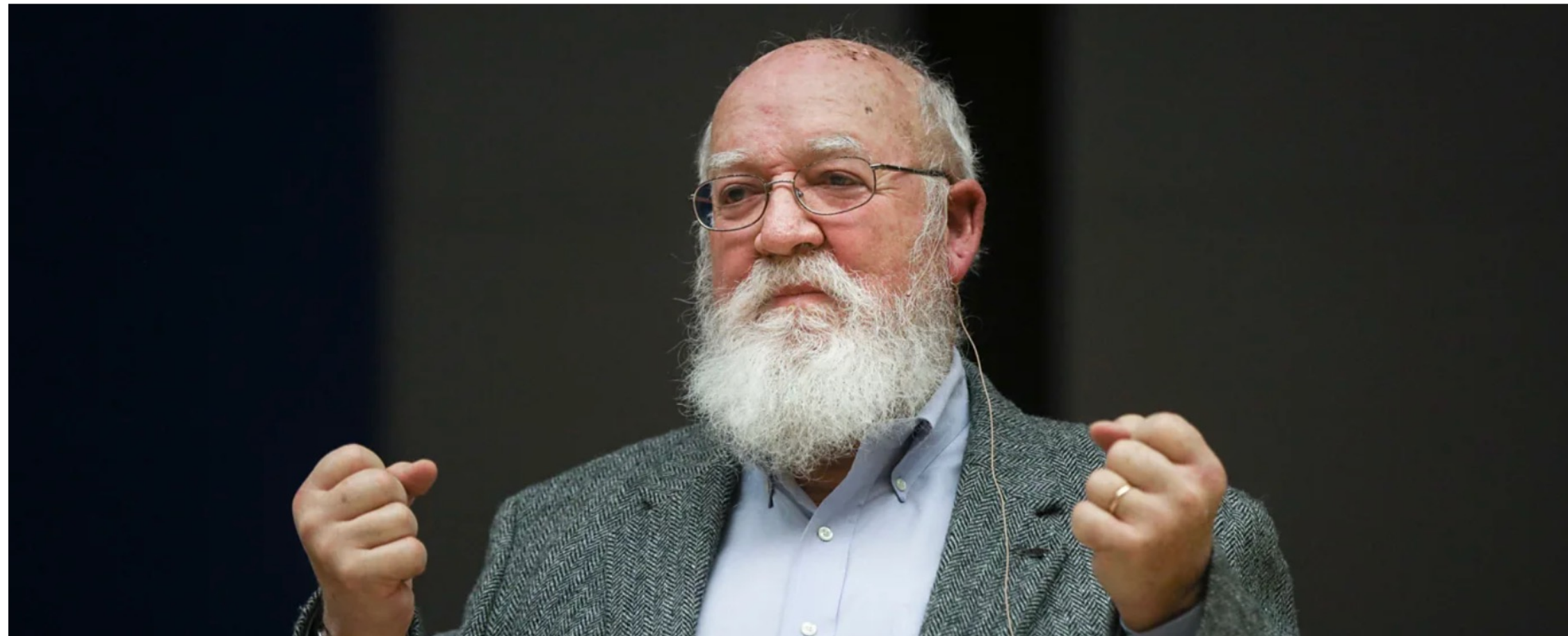Image source: https://www.nbcnews.com/tech/tech-news/self-driving-uber-car-hit-killed-woman-did-not-recognize-n1079281

Immediate threat

Daniel Dennett: 'Why civilisation is more fragile than we realised'

19 hours ago

By Tom Chatfield, Features correspondent

His warning was **not of a takeover** by some superintelligence, but of a threat he believed that nonetheless could be existential for civilisation, rooted in the vulnerabilities of human nature.

"If we turn this wonderful technology we have for knowledge into a **weapon for disinformation**," he told me, "we are in deep trouble." Why? "Because **we won't know what we know**, and **we won't know who to trust**, and **we won't know whether we're informed or misinformed**. We may become either paranoid and hyper-sceptical, or just apathetic and unmoved. Both of those are very dangerous avenues. And they're upon us."

Source: https://www.bbc.com/future/article/20240422-philosopher-daniel-dennett-artificial-intelligence-consciousness-counterfeit-people

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