COMP2261 ARTIFICIAL INTELLIGENCE / MACHINE LEARNING

Introduction to Artificial Intelligence

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learning lab

Learning Objectives

- Understand the Philosophy behind Artificial Intelligence.
- Know about the brief History of Artificial Intelligence.

- Artificial Intelligence, a red-hot buzzword
- Many AI-powered products around us
- Daily lives more convenient more fun

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Obama Toonified with AI

fine-tuned StyleGAN2 FFHQ face model with cartoon images to transform President Obama's face into a cartoon.

by Nathan Shipley

http://www.nathanshipley.com

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Obama Toonified and Animated with AI

First Order Motion model to apply motion from a TikTok video

by Nathan Shipley
http://www.nathanshipley.com

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is this fun?

or, is this scary?

are there anything that we should be worried about?

think about it...

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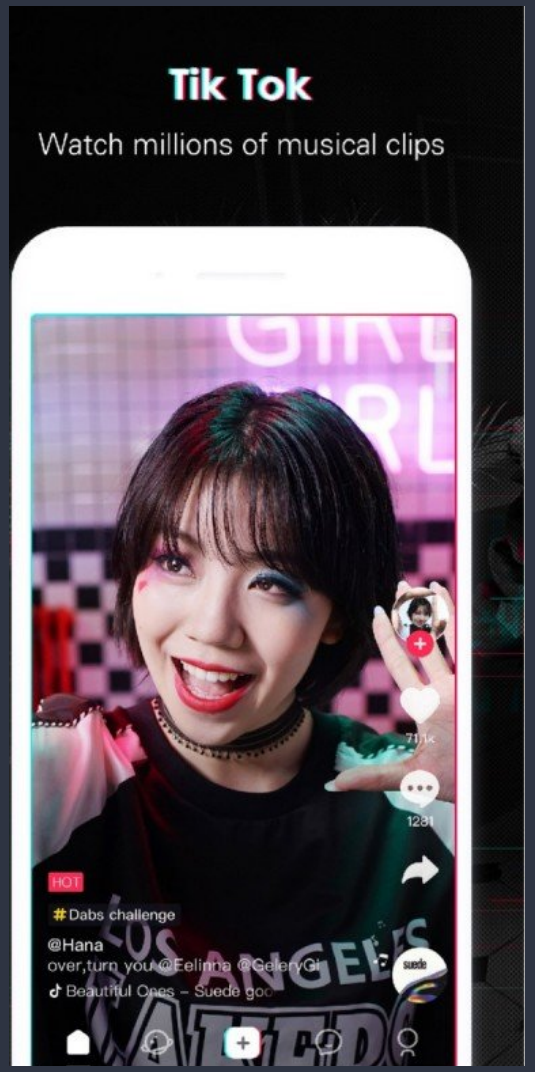
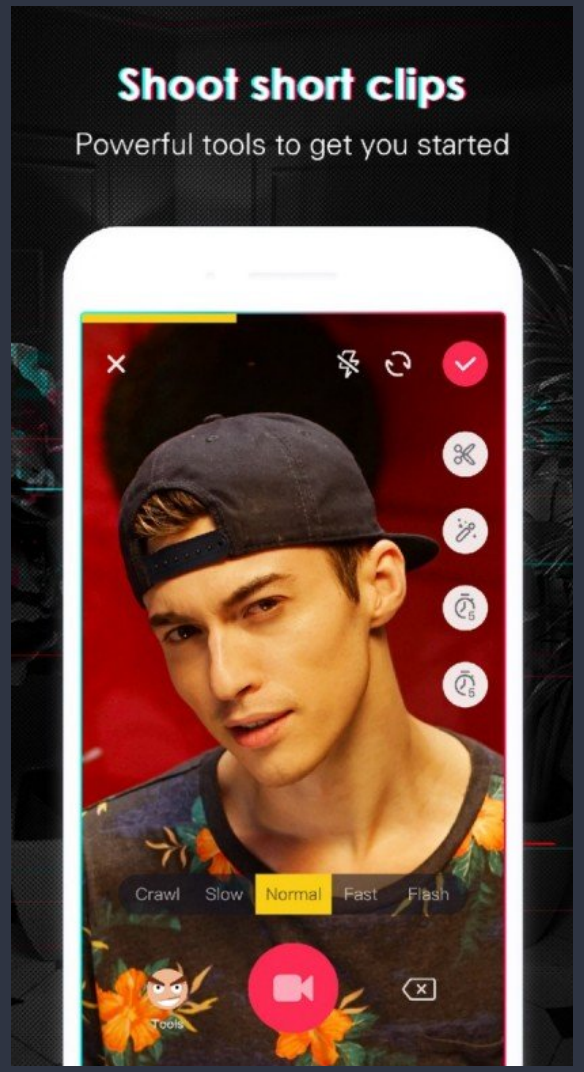
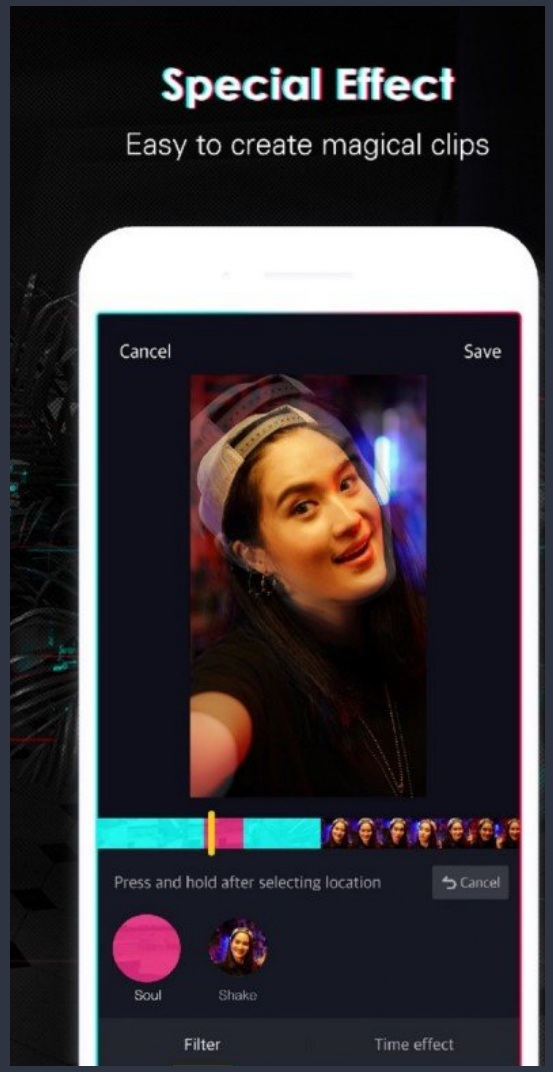
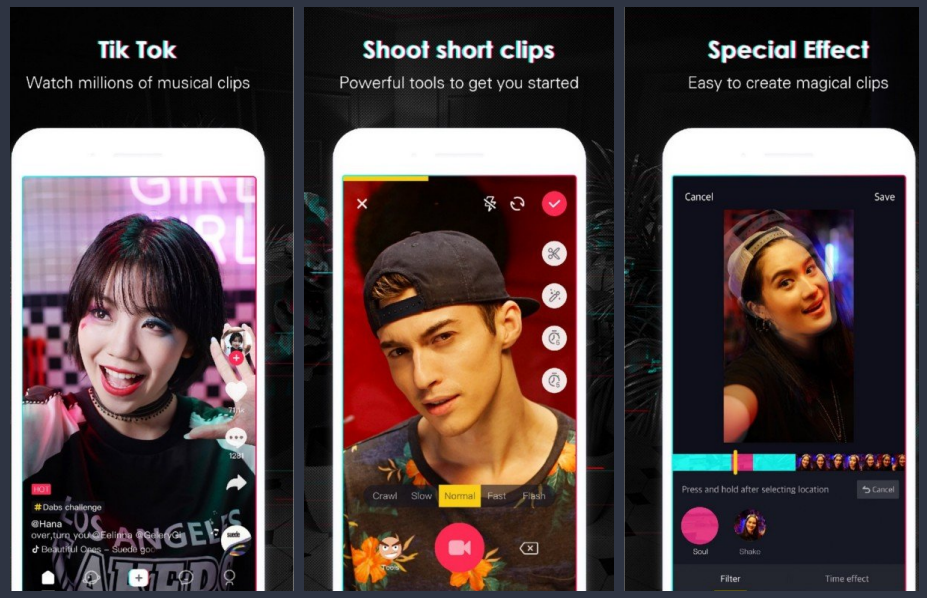






TikTok screenshots. © Handout © Getty Images



TikTok screenshots. © Handout

It is NOT

just a video sharing platform, with some personalised recommendations

It CAN

understand user behaviour in short time and make spot-on predictions about which videos will catch a particular user's interest

simplify video editing and suggest enhancements in components like filters, background music and hashtags

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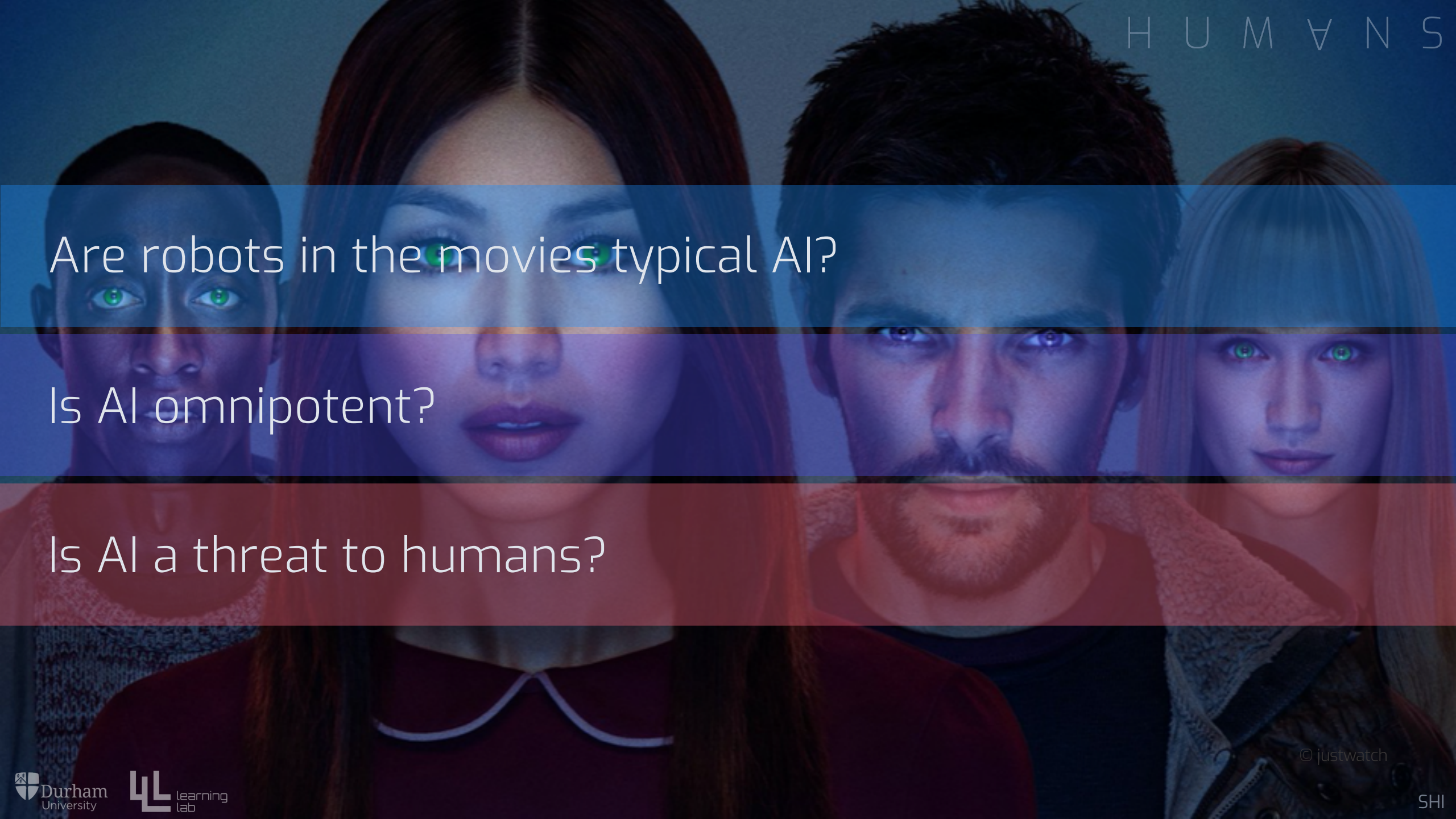
So, what is AI exactly?



Are robots in the movies typical AI?

Is AI omnipotent?

Is AI a threat to humans?

© justwatch

Well, AI is overhyped!

The beginning of AI

The beginning of AI

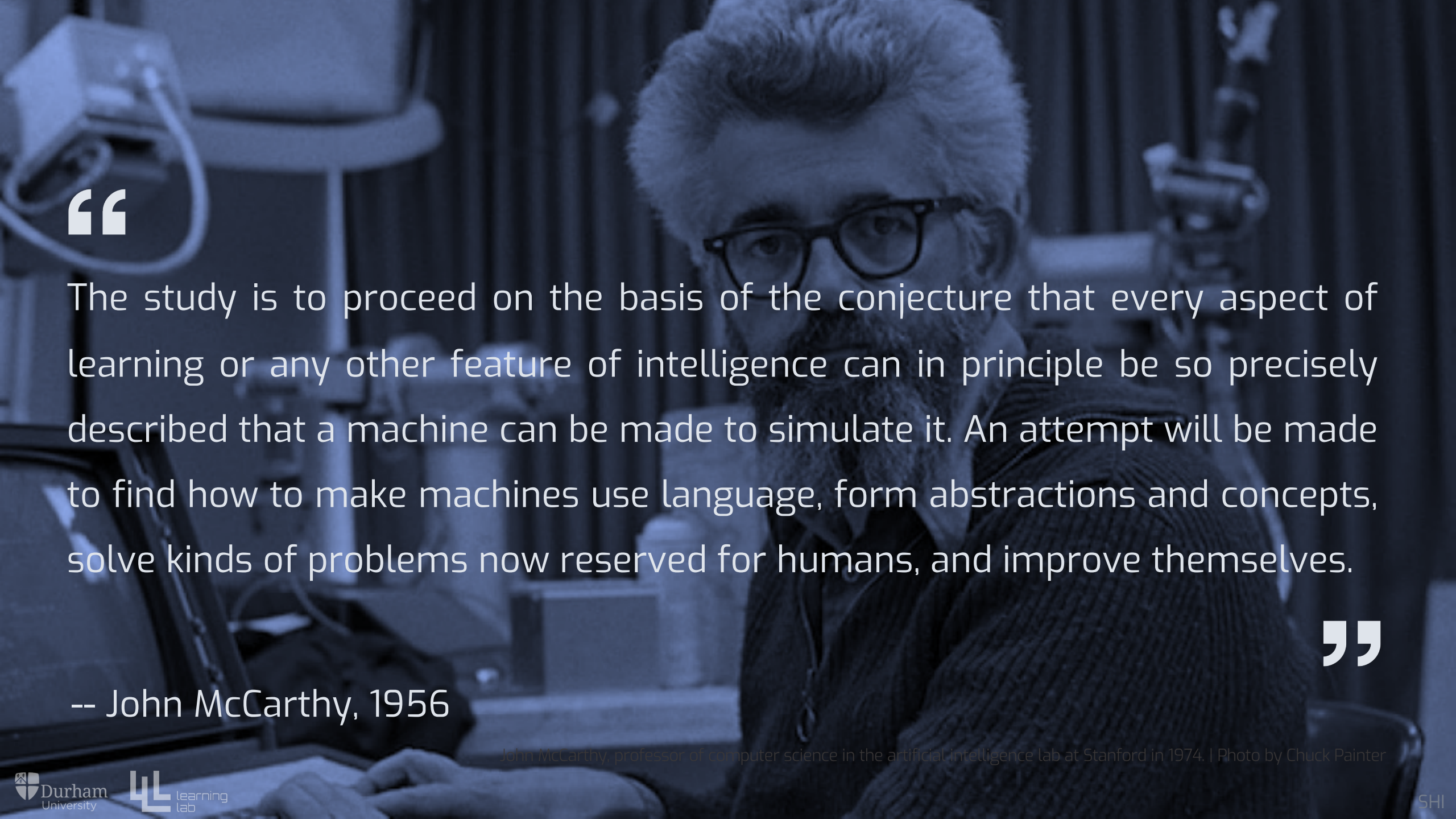
A Proposal for the

DARTMOUTH SUMMER RESEARCH PROJECT ON ARTIFICIAL INTELLIGENCE

June 17 - Aug. 16

We propose that a 2 month, 10 man study of artificial intelligence be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire. The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves. We think that a significant advance can be made in one or more of these problems if a carefully selected group of scientists work on it together for a summer.

@Dartmouth Workshop, 1956



“The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves.”

-- John McCarthy, 1956

John McCarthy, professor of computer science in the artificial intelligence lab at Stanford in 1974. | Photo by Chuck Painter

Translate…

- A machine can solve problems that are usually done by us humans with our natural intelligence.
- A machine can demonstrate some form of intelligence when it learns how to improve itself for solving those problems.

John McCarthy, professor of computer science in the artificial intelligence lab at Stanford in 1974. | Photo by Chuck Painter

Many researchers attended the Dartmouth Workshop predicted that a machine as intelligent as a human being would exist within a generation

- Expert systems
- Logical rules
- Manually programmed

The 1st Wave

Handcrafted Knowledge

- Statistical methods
- Large amounts of data
- Model patterns for predictions

The 2nd Wave

Statistical Learning

The 3rd Wave

Deep Learning + Big Data

- Massive data from Internet
- GPU in use
- Rapid development of DL

What can AI not do?

Three Levels of AI

Super AI

Self-aware and surpass the capacity of human intelligence and ability

Strong AI

can do all the work that human beings can

Weak AI

performs specific problem solving or reasoning tasks

✓ Takeaway Points

- AI was first coined by John McCarthy, at Dartmouth Workshop.
- Many AI-powered products are around us already.
- Not necessary to be scared by robots in movies.
- We are in the 3rd Wave of AI with exciting opportunities.
- We are at the Weak AI level - specific problem solving / reasoning.
- We are nowhere near Strong AI or Artificial Superintelligence.