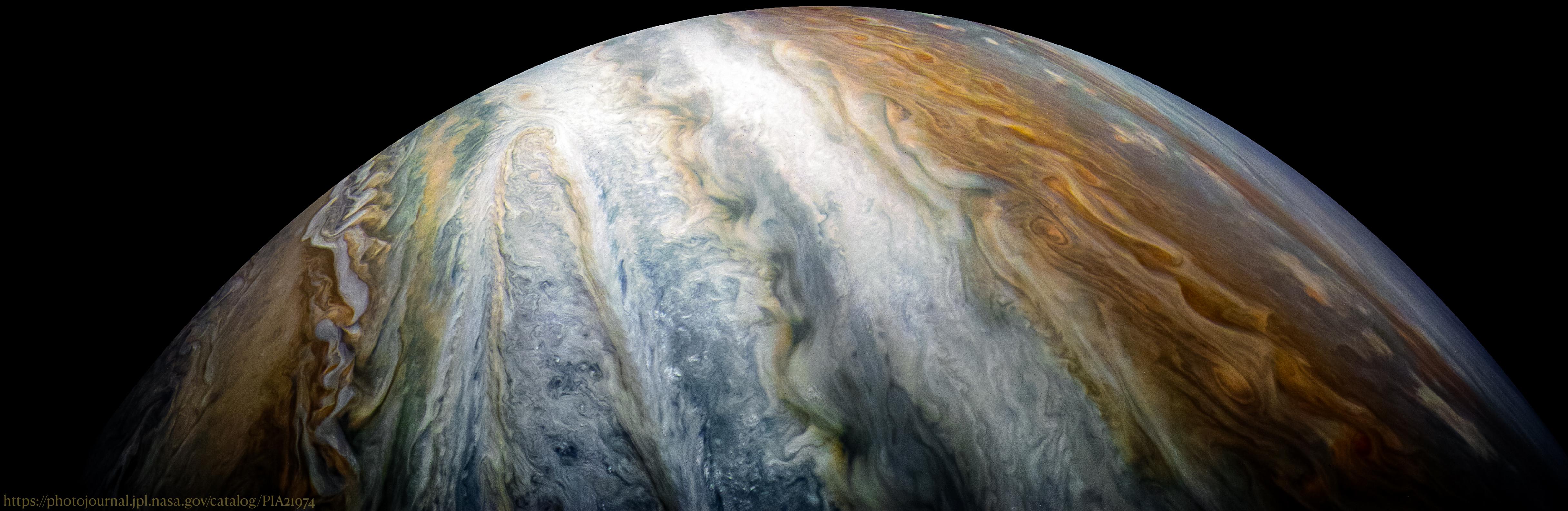


# MLSP Winter Sessions 22

Jaswanth Reddy K

Coordinated by Dr. G Mamatha, SDIC



# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?

# Let us have a look at history

THE MILLION COPY BESTSELLER

Yuval Noah Harari



# Sapiens

A Brief  
History of  
Humankind

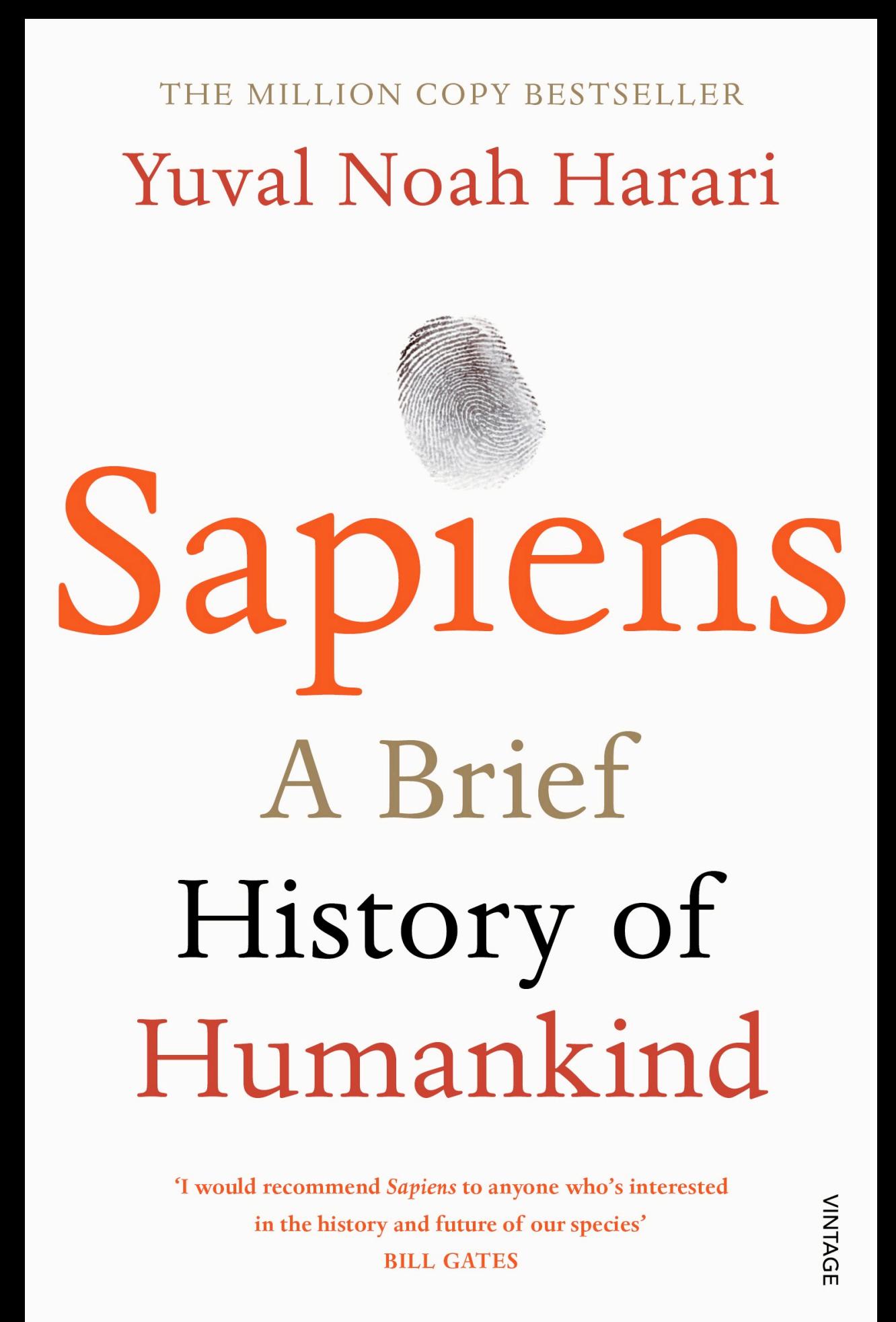
'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'

BILL GATES

VINTAGE

# Let us have a look at history

- Cognitive Revolution



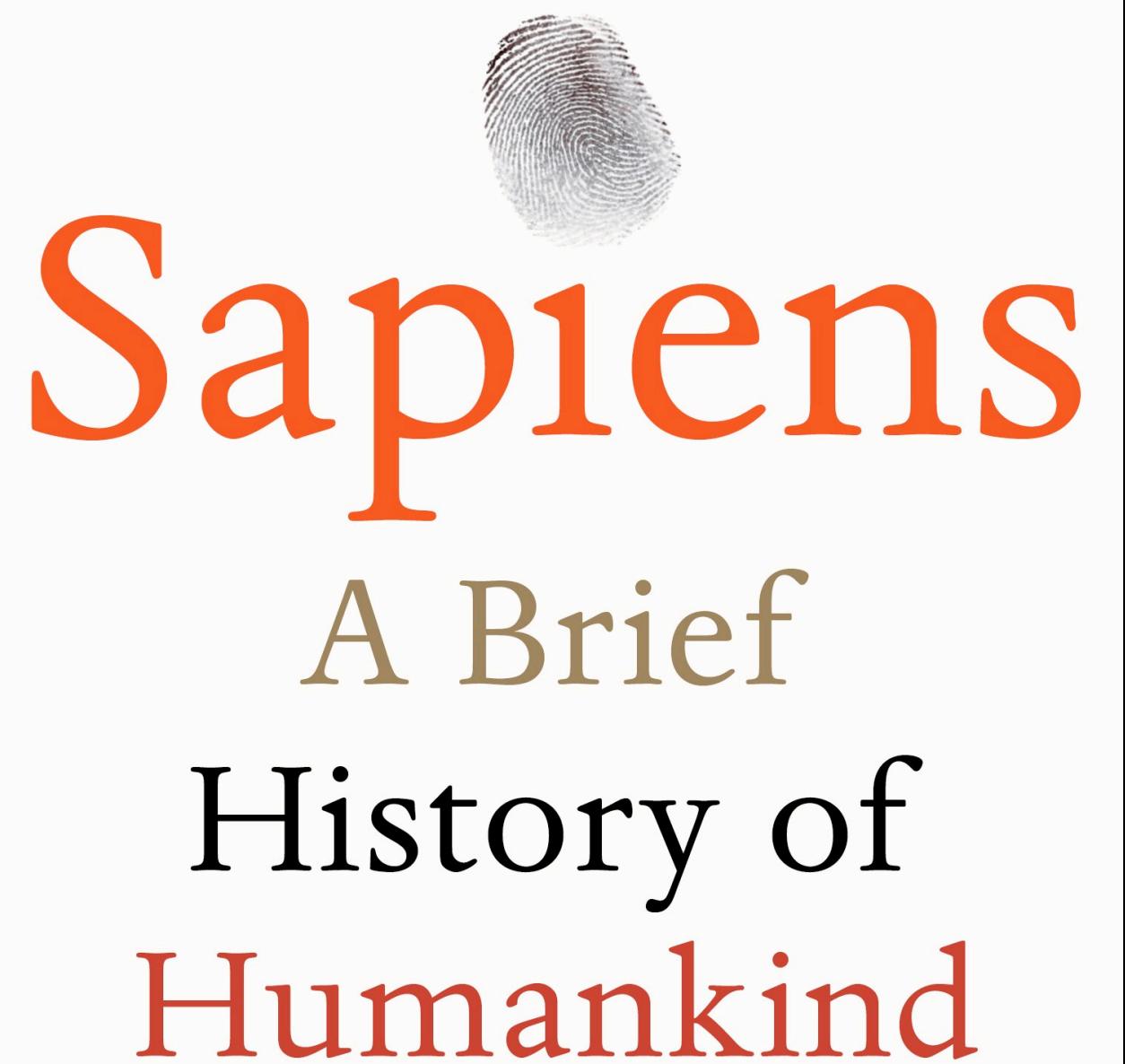
# Let us have a look at history



- Cognitive Revolution

THE MILLION COPY BESTSELLER

Yuval Noah Harari



'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'

BILL GATES

# Let us have a look at history



THE MILLION COPY BESTSELLER

Yuval Noah Harari



# Sapiens

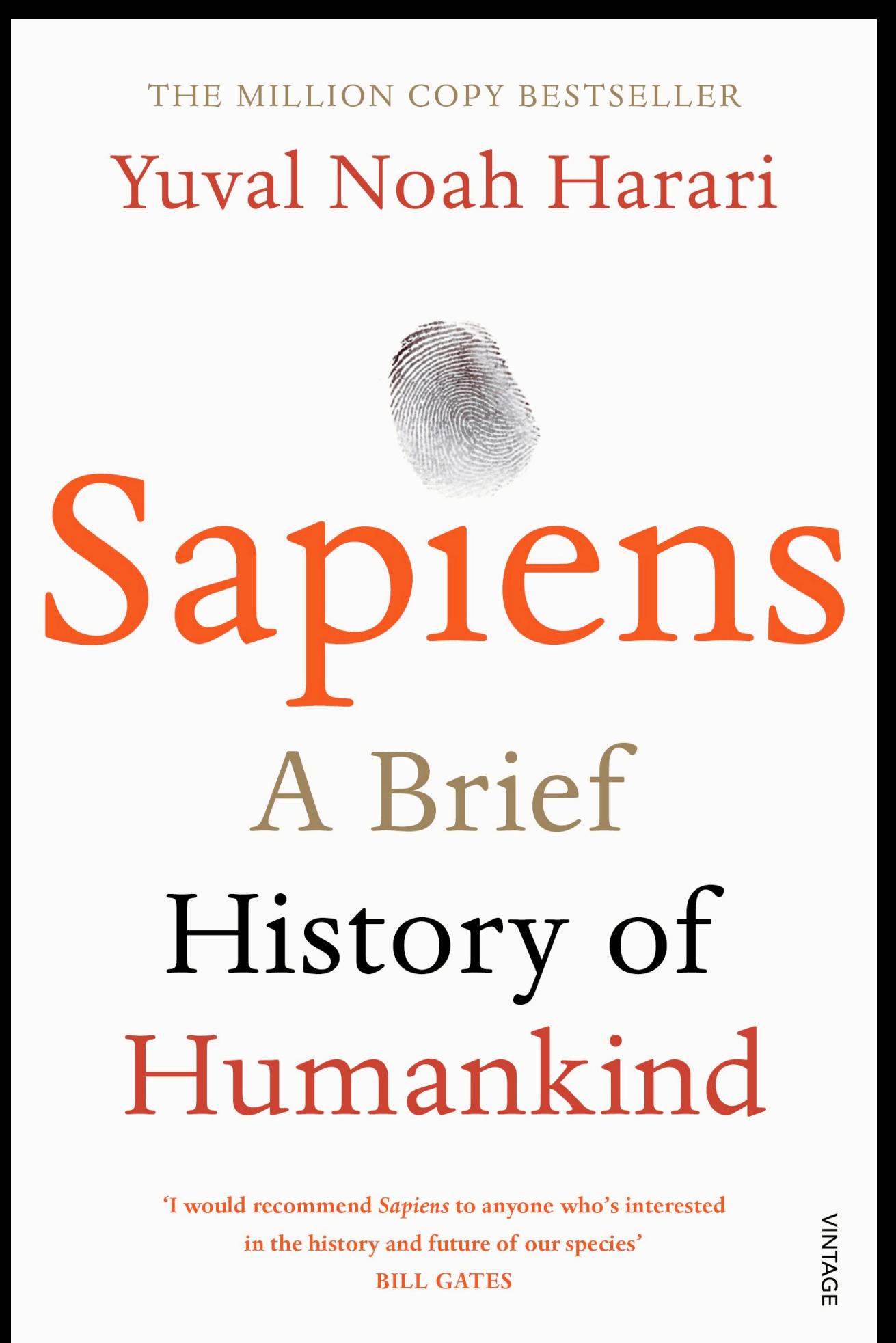
A Brief  
History of  
Humankind

'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'  
BILL GATES

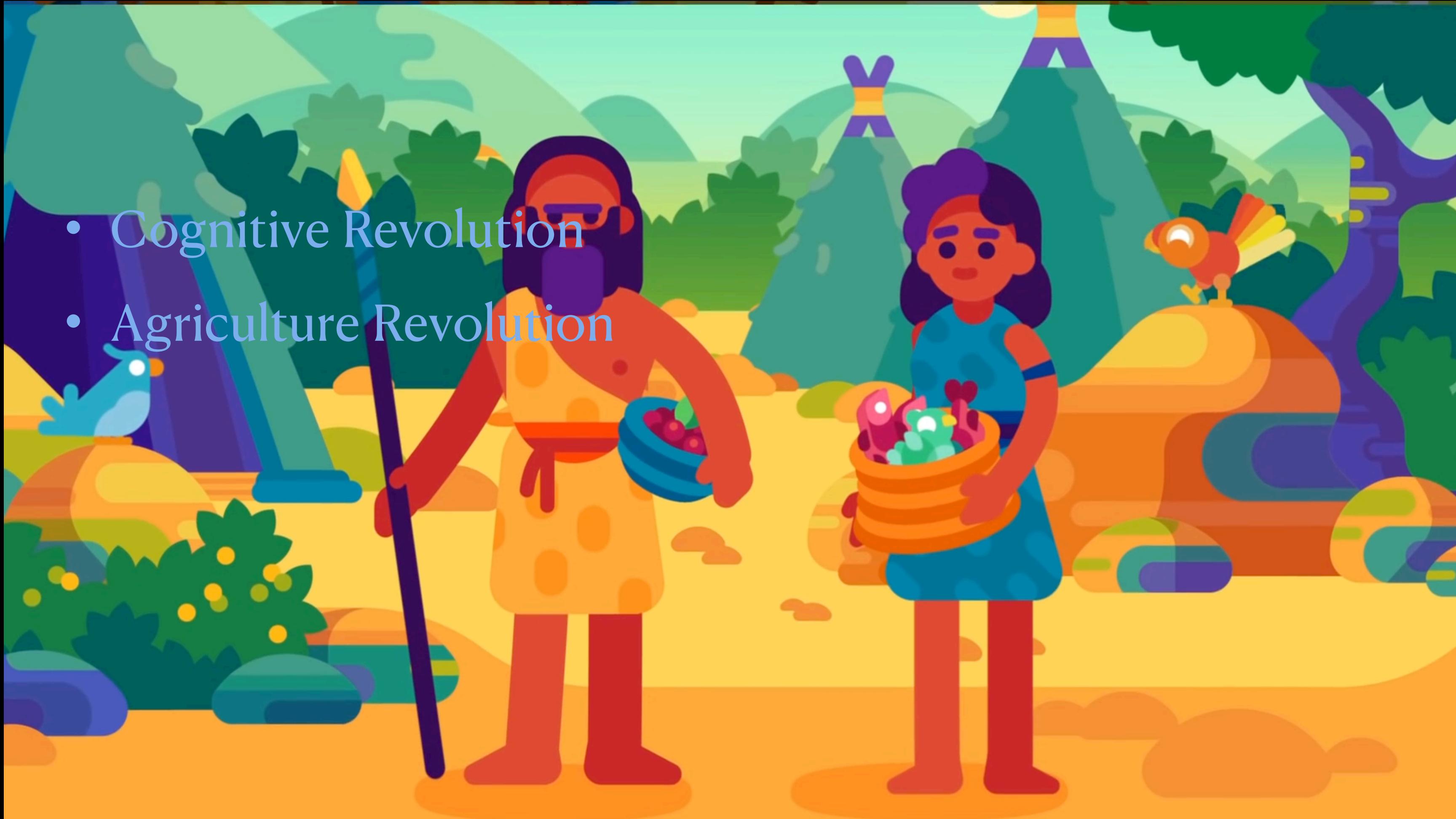
VINTAGE

# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution

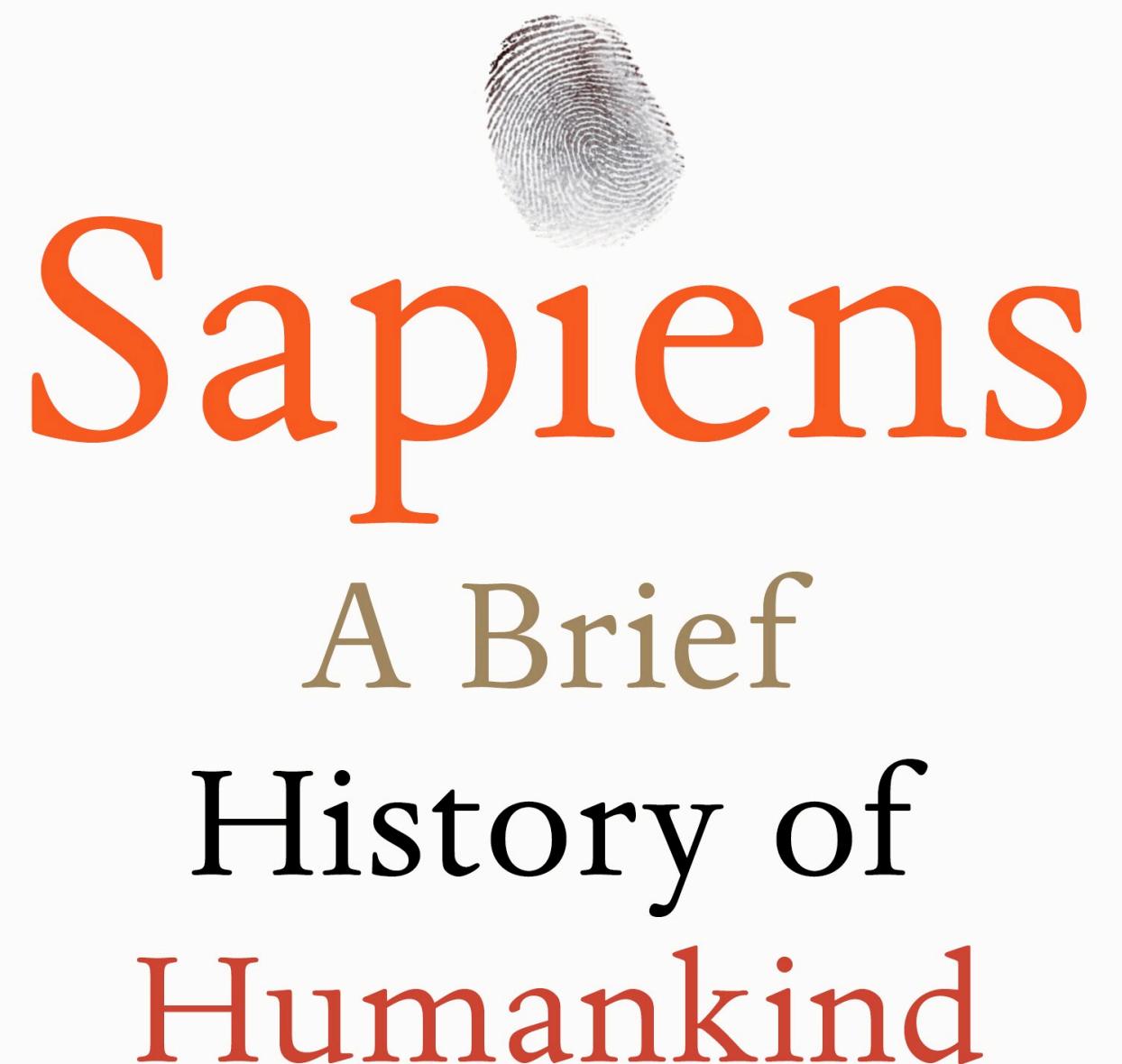


# Let us have a look at history



THE MILLION COPY BESTSELLER

Yuval Noah Harari

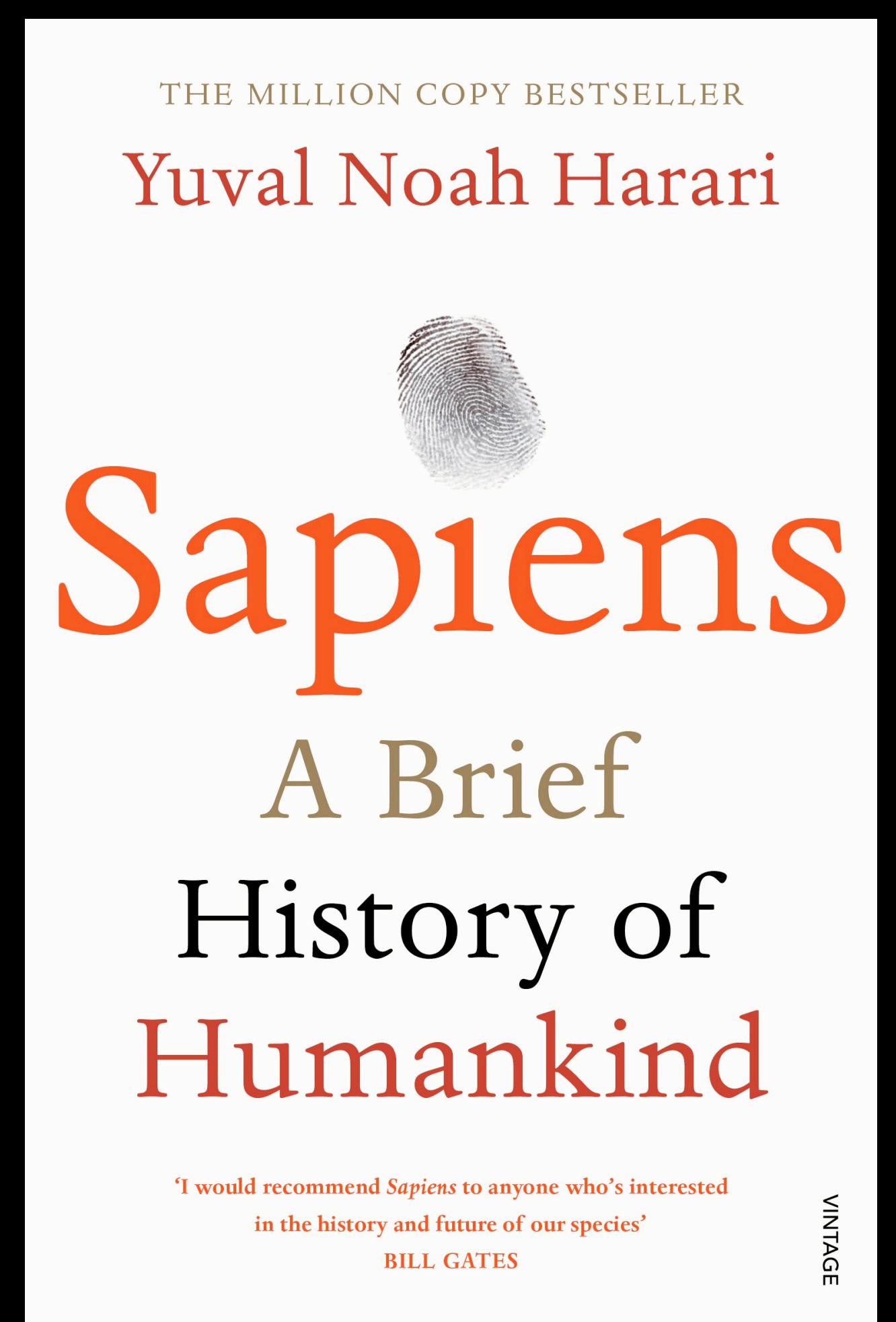


'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'  
BILL GATES

VINTAGE

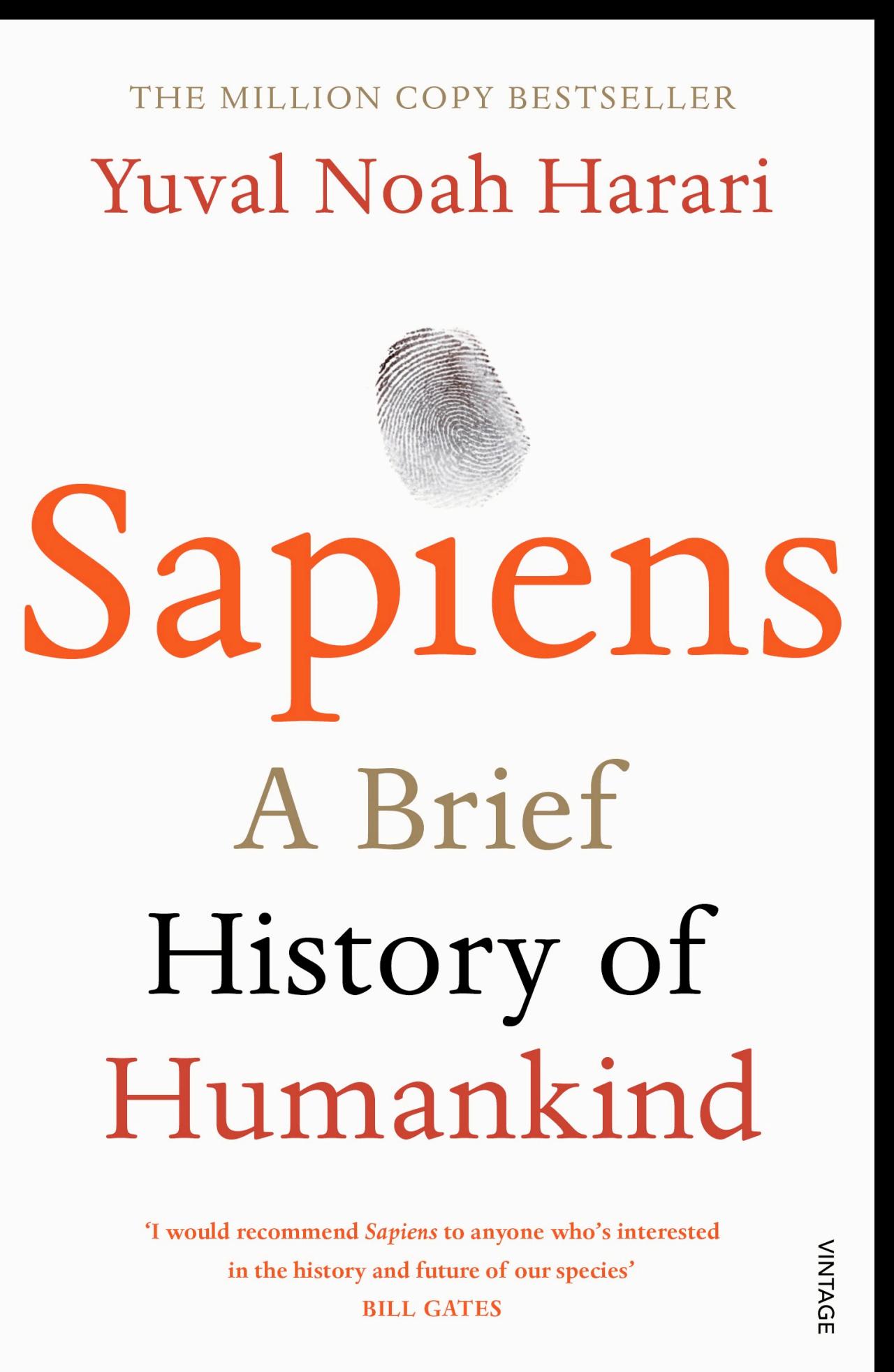
# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money



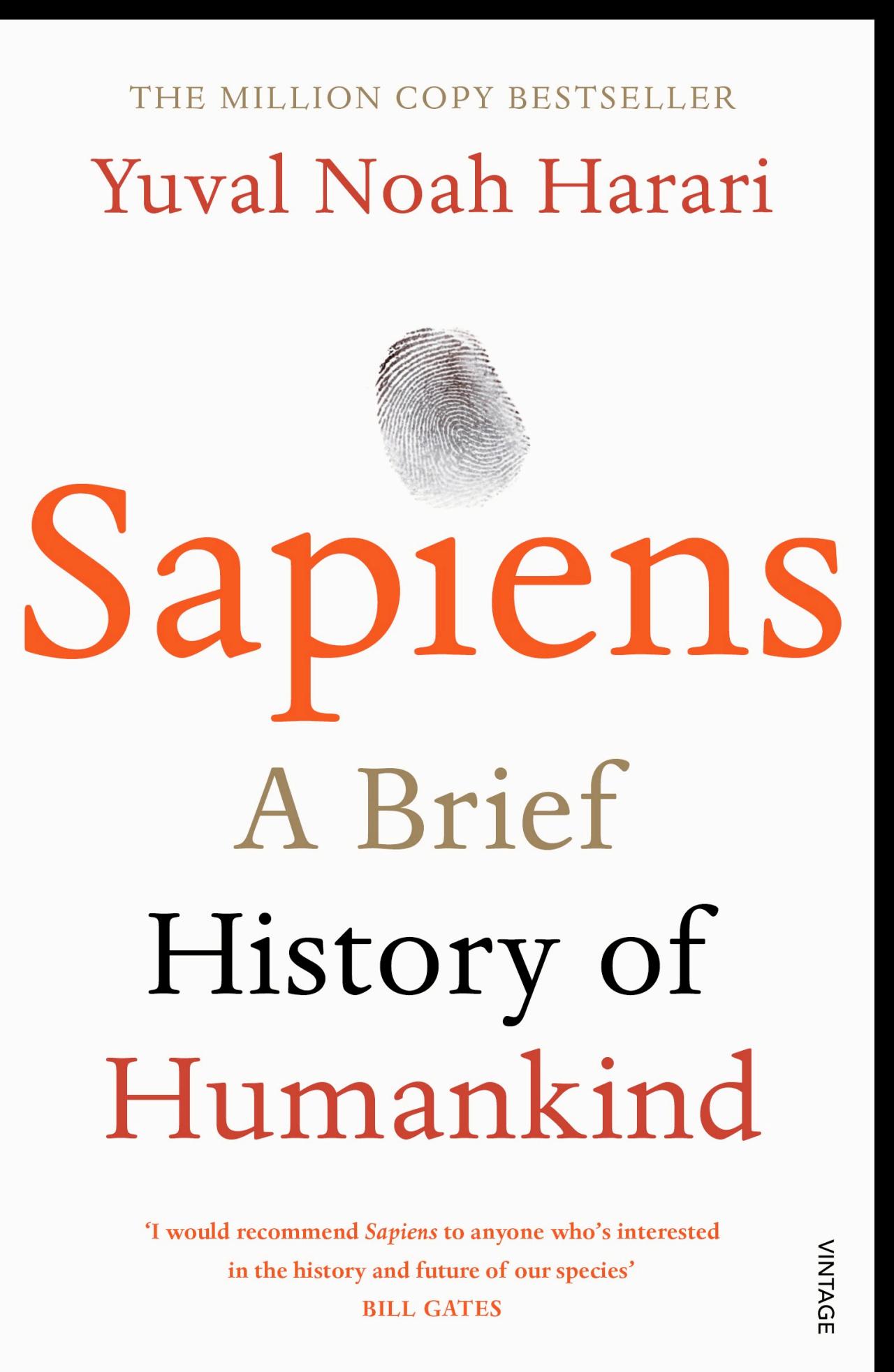
# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance



# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance
- Industrial Revolution



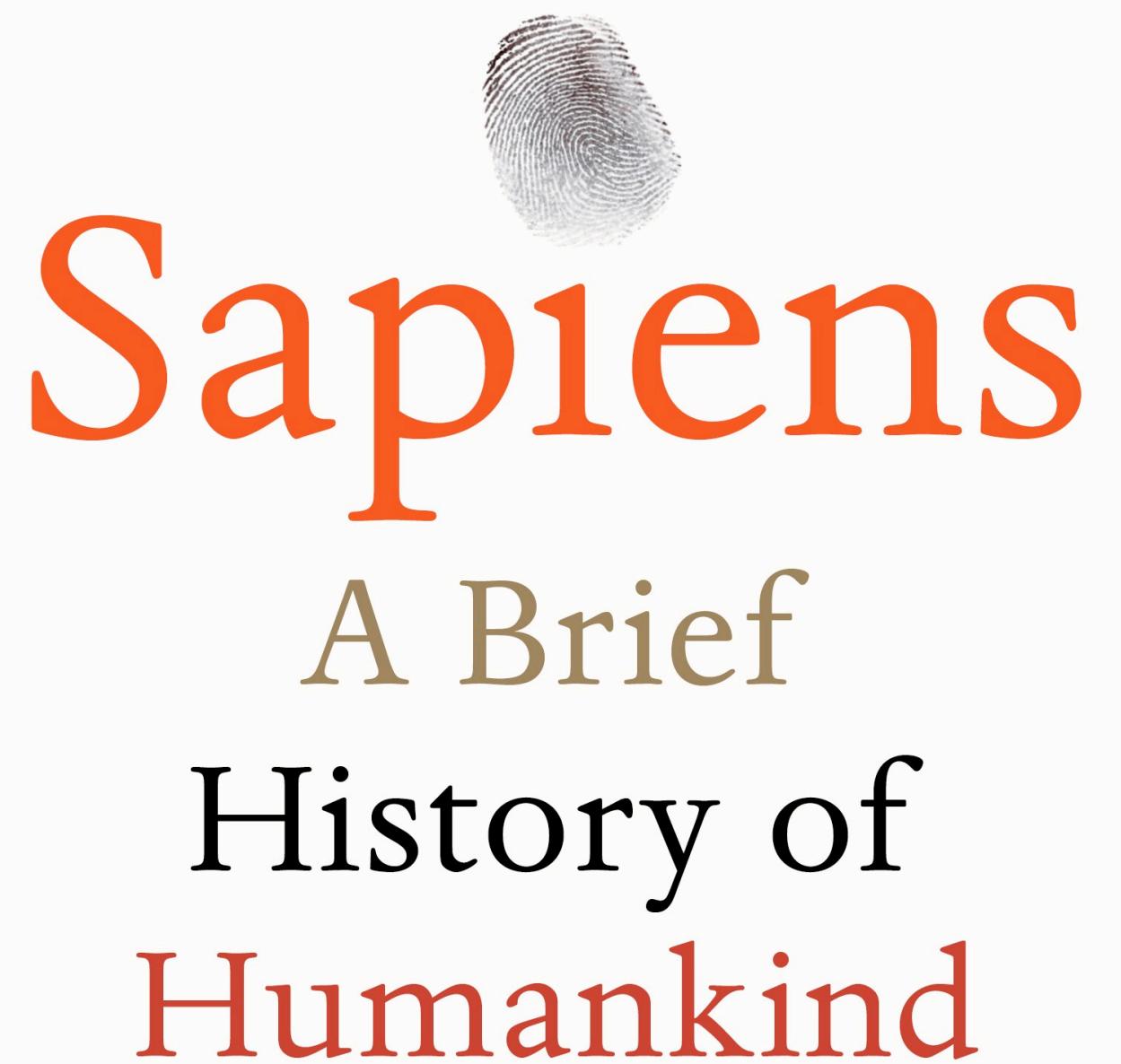
# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance
- Industrial Revolution



THE MILLION COPY BESTSELLER

Yuval Noah Harari



'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'

BILL GATES

VINTAGE

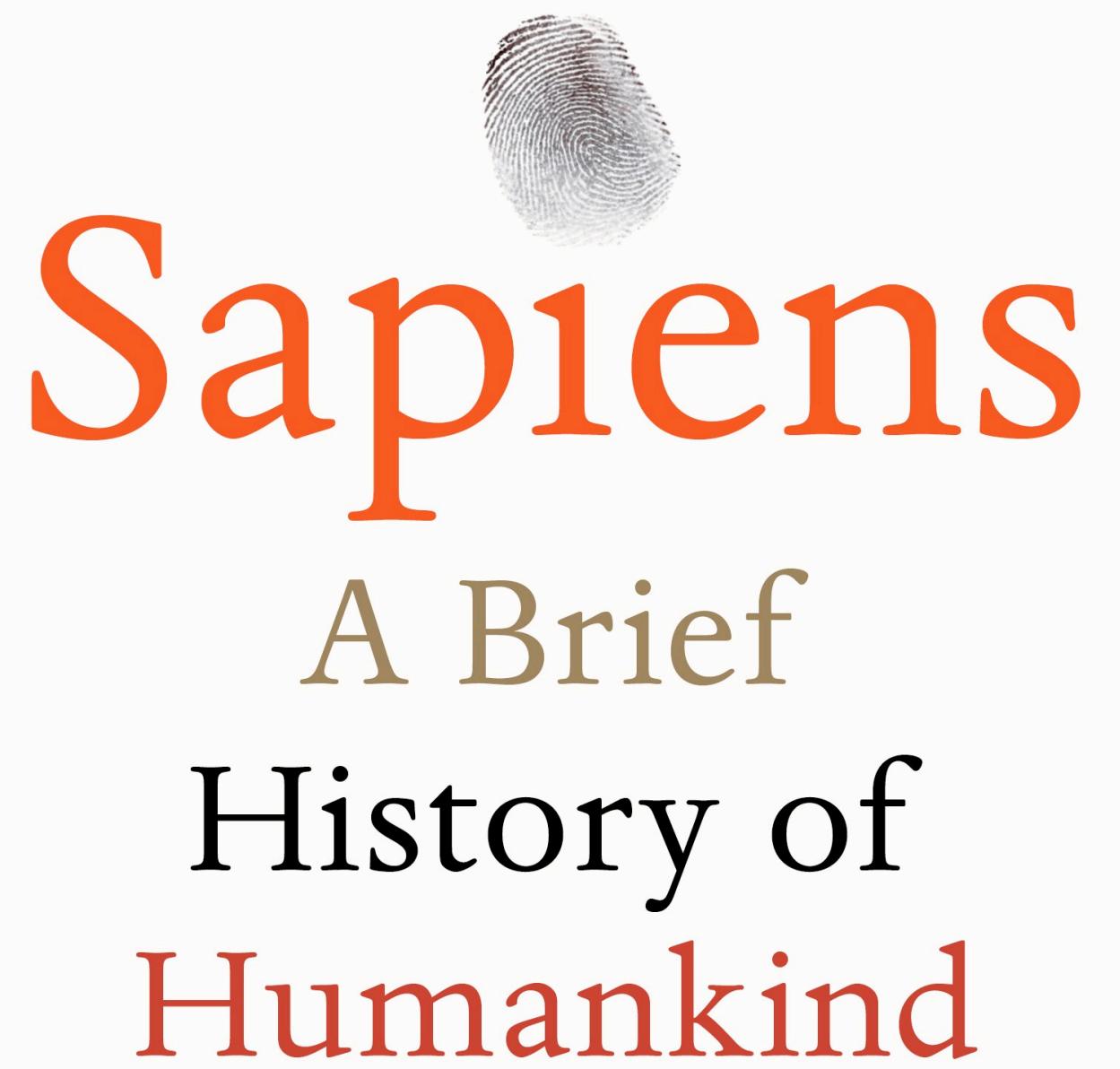
# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance
- Industrial Revolution



THE MILLION COPY BESTSELLER

Yuval Noah Harari



'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'

BILL GATES

VINTAGE

# Let us have a look at history

THE MILLION COPY BESTSELLER

Yuval Noah Harari



# Sapiens

A Brief  
History of  
Humankind

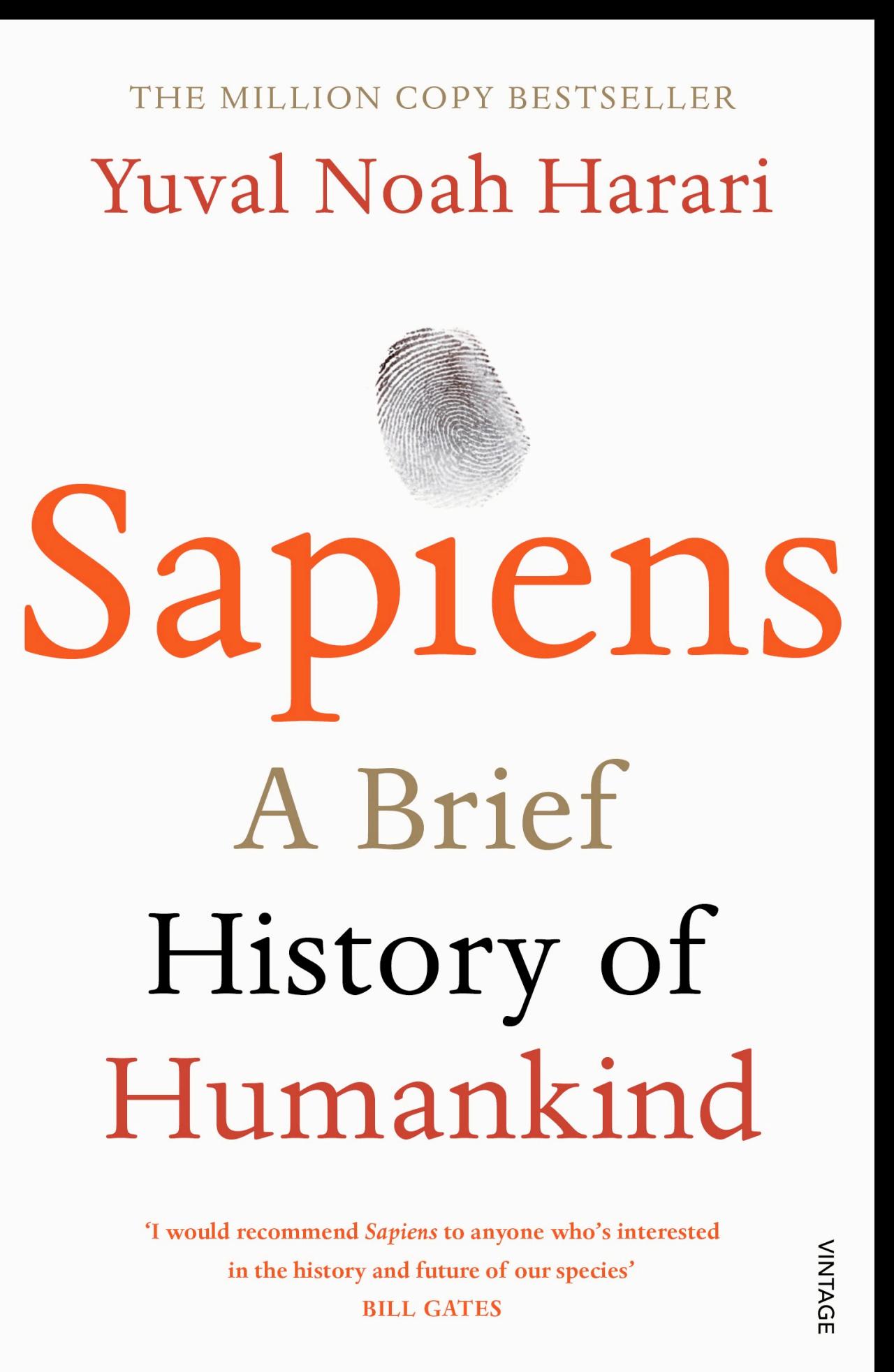
'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'

BILL GATES

VINTAGE

# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance
- Industrial Revolution



# Engines



# Engines



# Engines



# Engines

- Drivers



# Engines

- Drivers
- ‘Engine’-eers



# Engines

- Drivers
- ‘Engine’-eers
- Fuel



# Engines

- Drivers
- ‘Engine’-eers
- Fuel
- Manufacturing



# Engines

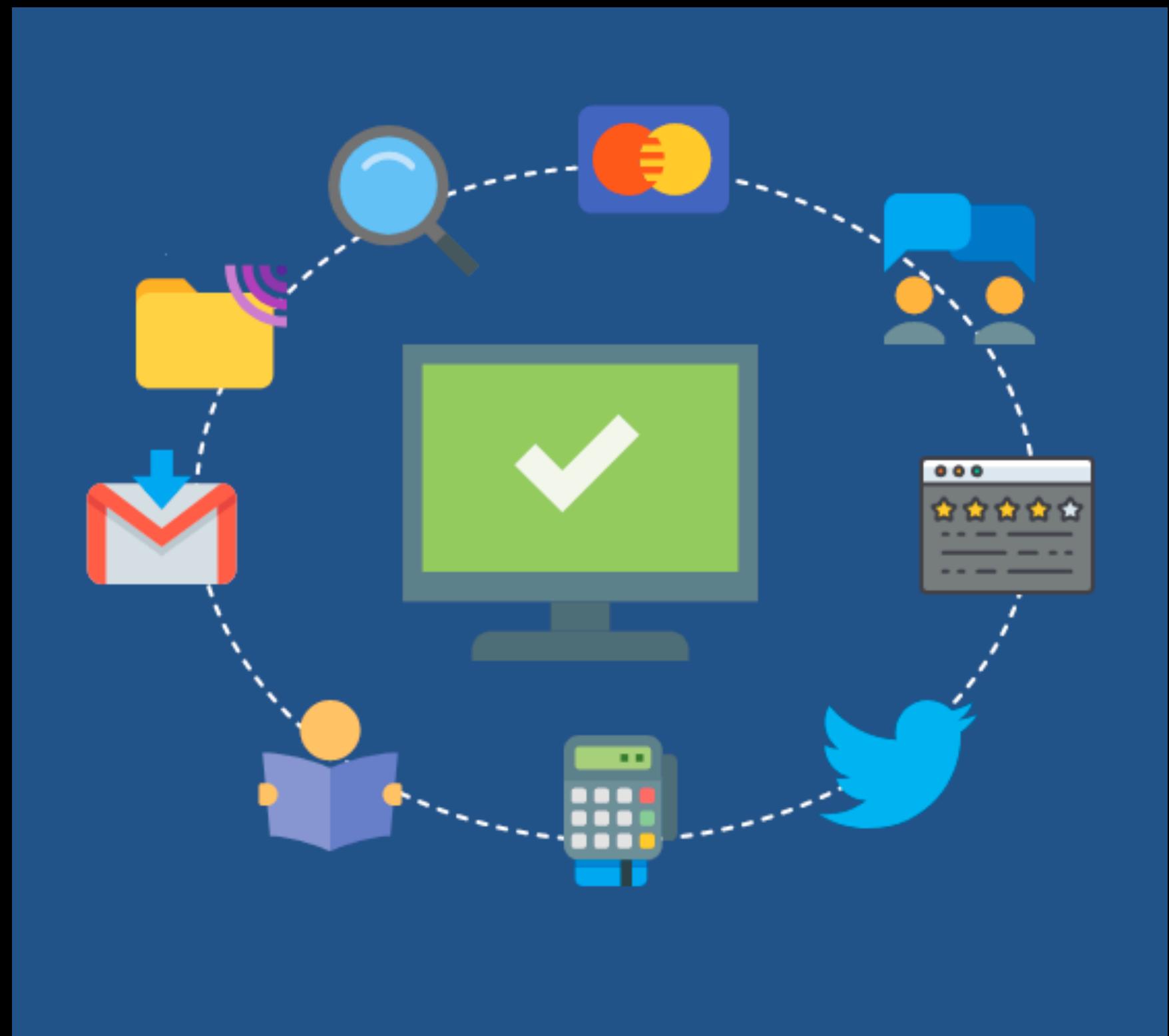
- Drivers
- ‘Engine’-eers
- Fuel
- Manufacturing
- Factories



# Engines

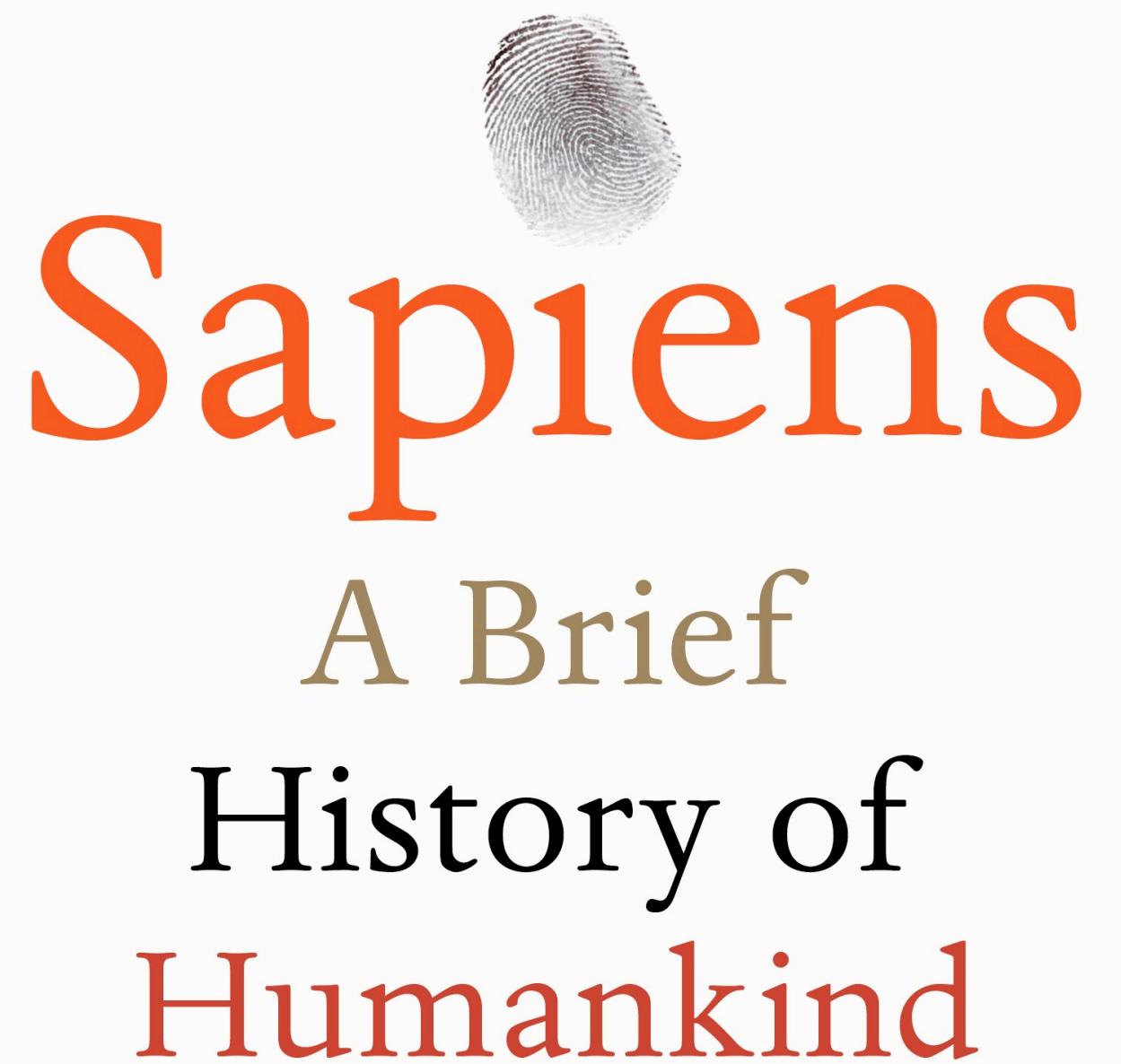


# Let us have a look at history



THE MILLION COPY BESTSELLER

Yuval Noah Harari



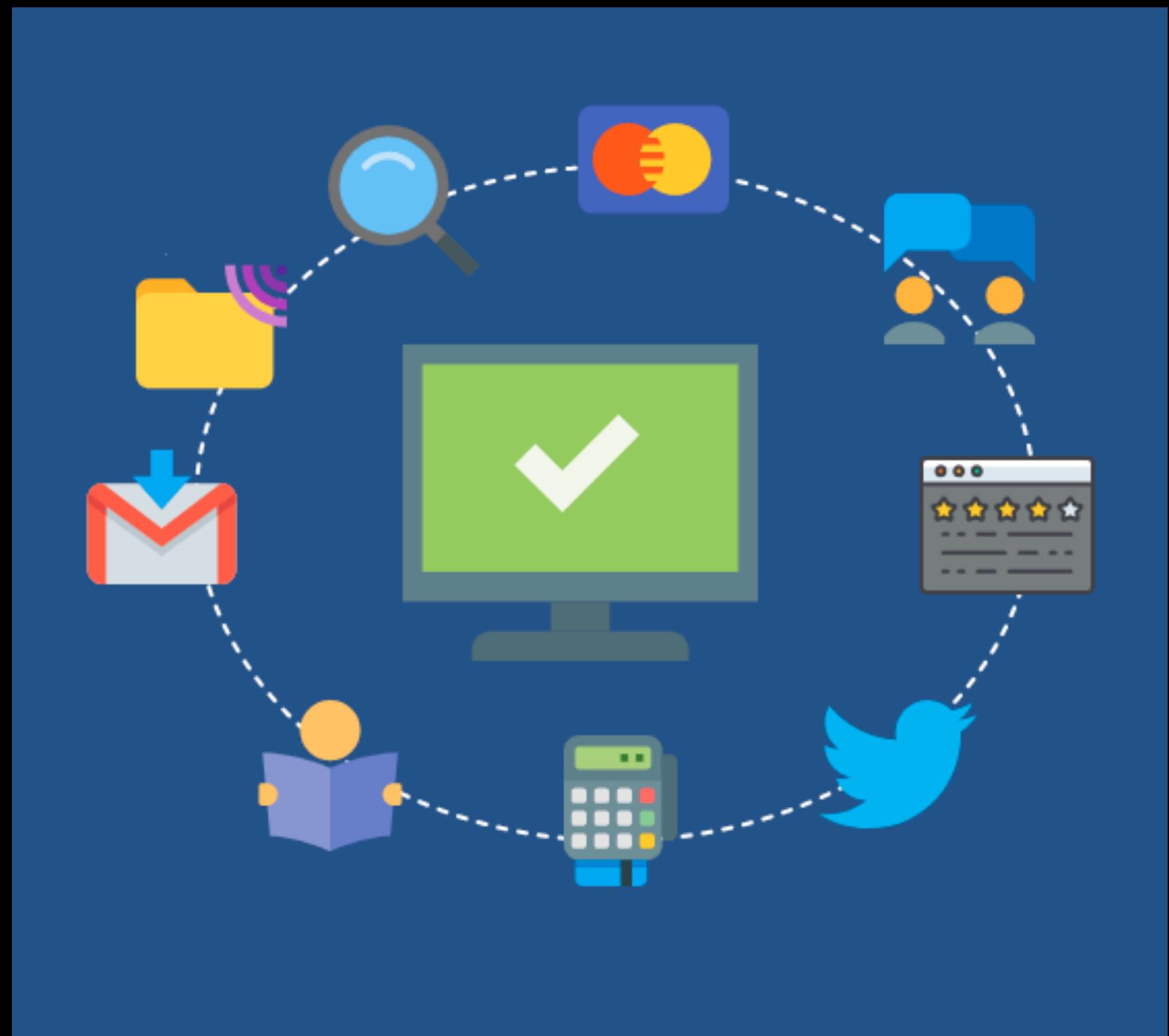
'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'

BILL GATES

VINTAGE

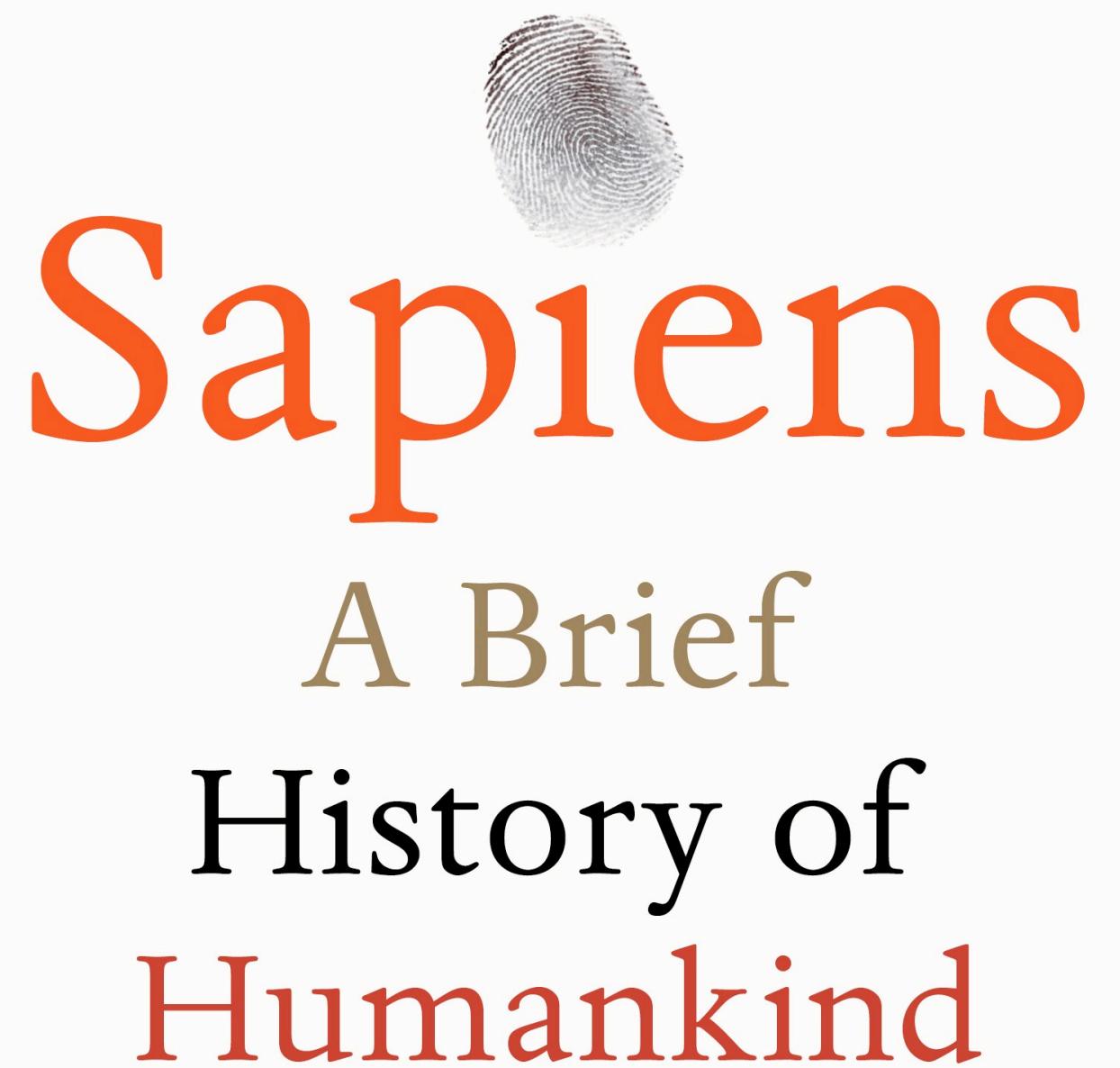
# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance
- Industrial Revolution



THE MILLION COPY BESTSELLER

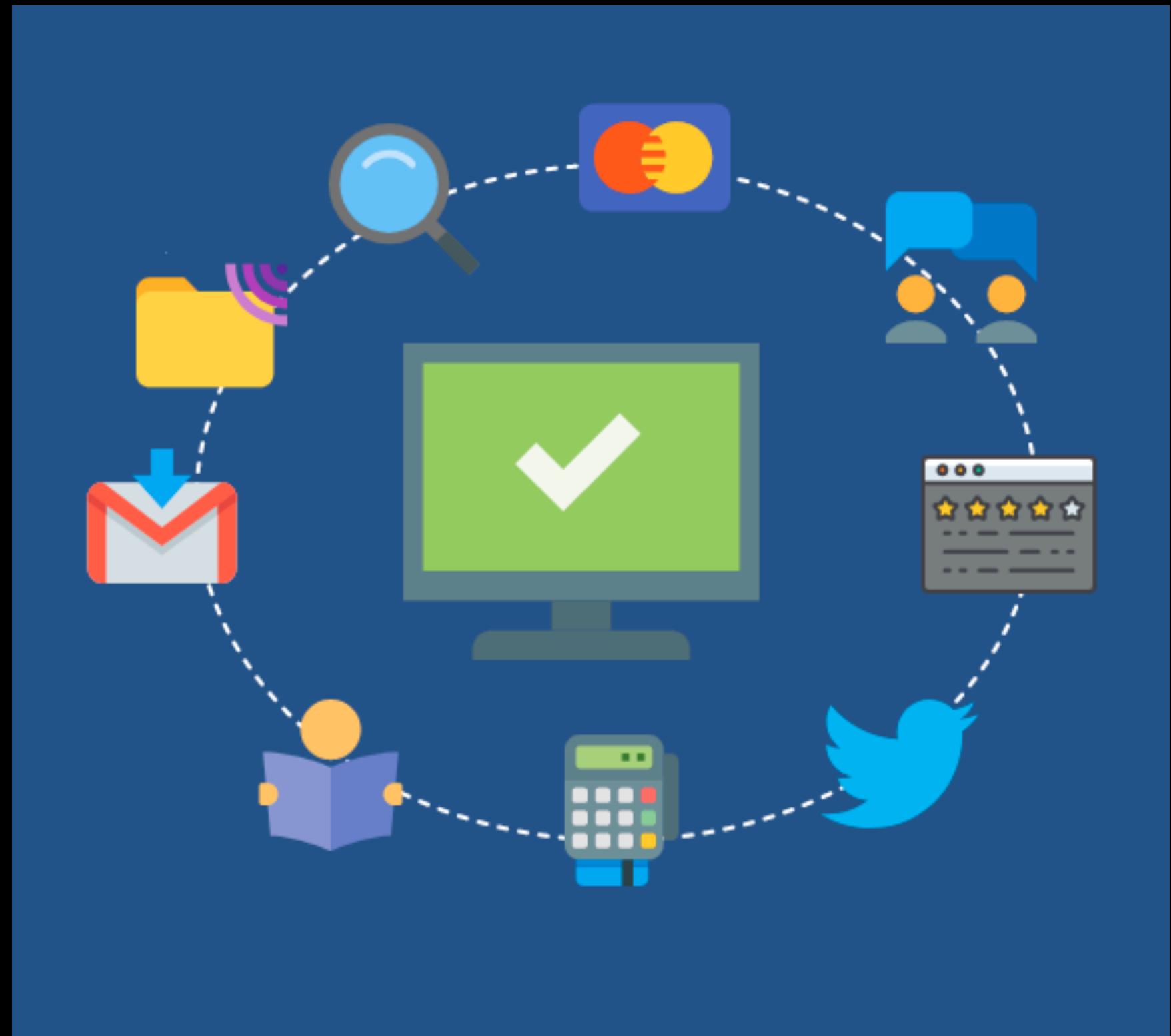
Yuval Noah Harari



'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'  
BILL GATES

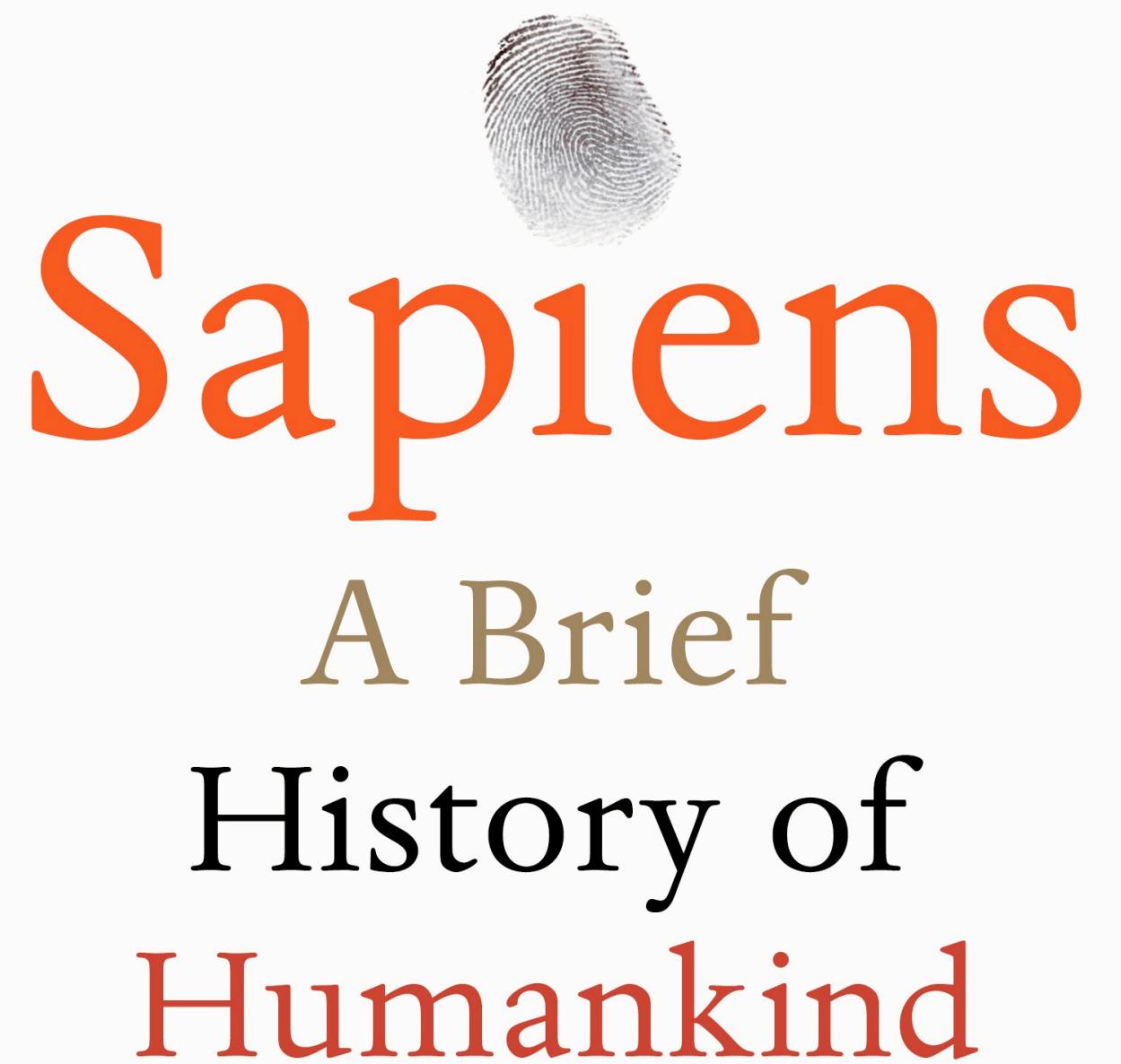
# Let us have a look at history

- Cognitive Revolution
- Agriculture Revolution
- Money
- Renaissance
- Industrial Revolution
- Artificial Intelligence



THE MILLION COPY BESTSELLER

Yuval Noah Harari



'I would recommend *Sapiens* to anyone who's interested  
in the history and future of our species'  
BILL GATES

# New Engines

# New Engines

- No longer need them :
  - ~~Drivers~~
  - ~~'Engine'-eers~~
  - ~~Fuel~~
  - ~~Manufacturing~~
  - ~~Factories~~

# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - ~~Drivers~~
  - ~~'Engine'-eers~~
  - ~~Fuel~~
  - ~~Manufacturing~~
  - ~~Factories~~

# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - ~~Drivers~~
  - ~~'Engine'ers~~
  - ~~Fuel~~
  - ~~Manufacturing~~
  - ~~Factories~~
- We need

# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - ~~Drivers~~
  - ~~'Engine'ers~~
  - ~~Fuel~~
  - ~~Manufacturing~~
  - ~~Factories~~
- We need
  - Manage driving

# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - Drivers
  - ‘Engine’-eers
  - Fuel
  - Manufacturing
  - Factories
- We need
  - Manage driving
  - Electrical Engine-eers

# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - Drivers
  - ‘Engine’-eers
  - Fuel
  - Manufacturing
  - Factories
- We need
  - Manage driving
  - Electrical Engine-eers
  - Design Manufacturing robots

# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - Drivers
  - ‘Engine’-eers
  - Fuel
  - Manufacturing
  - Factories
- We need
  - Manage driving
  - Electrical Engine-eers
  - Design Manufacturing robots
  - Design factory systems control

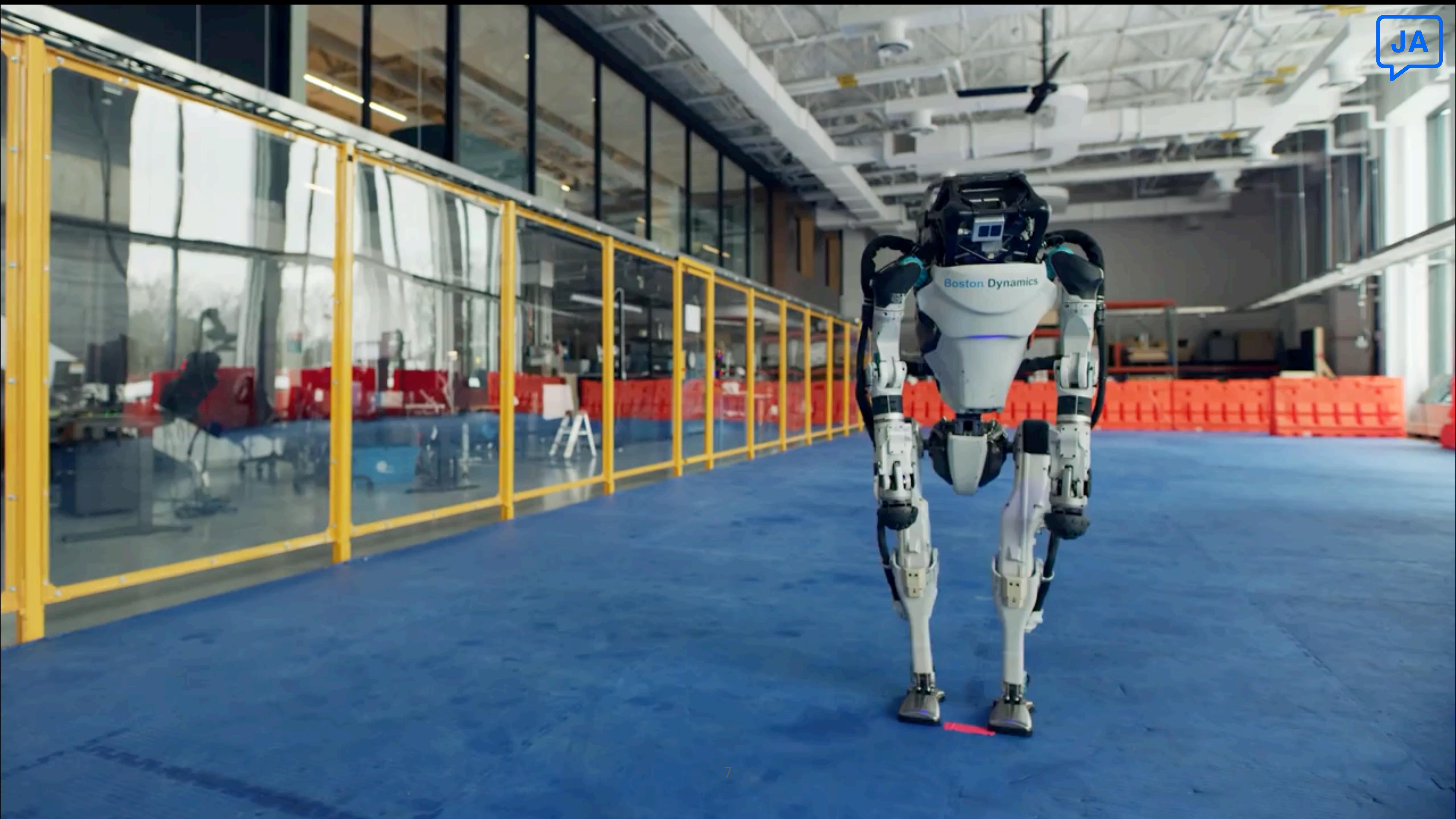
# New Engines

Browser Engine | OS Engine | Data Engine | Neural Engine | Electric Engine

- No longer need them :
  - Drivers
  - ‘Engine’-eers
  - Fuel
  - Manufacturing
  - Factories
- We need
  - Manage driving
  - Electrical Engine-eers
  - Design Manufacturing robots
  - Design factory systems control
  - Design and manage autonomous systems

# Robots

JA



# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?
- Design testers

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?
  - Design testers
  - Design auto-coding systems

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?
  - Design testers
  - Design auto-coding systems
  - Design autonomous systems

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?
  - Design testers
  - Design auto-coding systems
  - Design autonomous systems
  - Big data

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?
  - Design testers
  - Design auto-coding systems
  - Design autonomous systems
  - Big data
  - Data Scientist

# What next?

- GATE ?
- PSU ?
- Masters ?
- Job ?
  - Placement ?
  - Tester ?
  - Coder ?
- Auto management
- Maths and computers
- Job ?
  - Design testers
  - Design auto-coding systems
  - Design autonomous systems
  - Big data
  - Data Scientist
  - Business Analyst

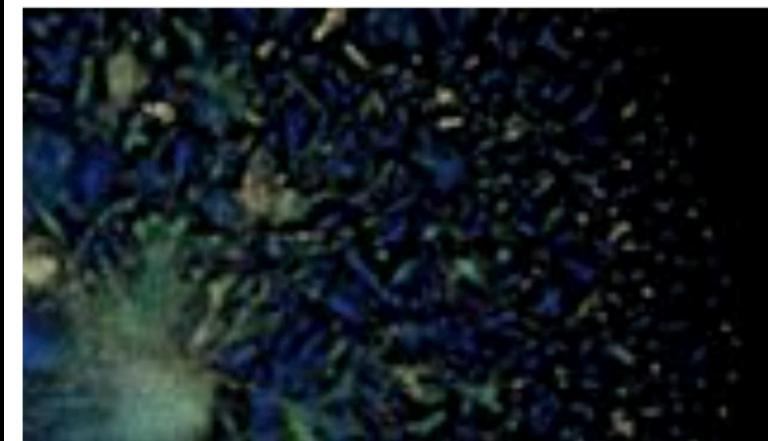
Your worth is not what you bring to the table,  
but how hard it is to replace you.

Your worth is not what you bring to the table,  
but how hard it is to replace you.

And it is very easy to replace you if you don't update.

# Recent ML Advancements

- Machine Learning and Artificial Intelligence are daily headlines.



## Perceptron: AI that sees with sound, learns to walk and predicts seismic physics

Research in the field of machine learning and AI, now a key technology in practically every industry...



## Will Robots Save The Future Of Work?

Alastair Bathgate is CEO of robotic process

a

a

B



## Microsoft and Nvidia team up to build new Azure-hosted AI supercomputer

Roughly two years ago, Microsoft announced a partnership with OpenAI, the AI lab with which it has a...

By Kyle Wiggers | November 16, 2022



## Perceptron: AI saving whales, steadyng gaits and banishing traffic

Research in the field of machine learning and AI, now a key technology in practically every industry...



## Salesforce researchers are working on an AI economist for more equitable tax policy

an AI policy is surely a complex beast, and depending on your political leanings, you probably have...

By Ron Miller | April 29, 2020

# Recent ML Advancements : Image



John Snow sitting on the iron throne

# Recent ML Advancements : Image

“You don’t need to paint  
for a painting, anymore.  
You can just type.”  
- Anonymous



John Snow sitting on the iron throne

# Recent ML Advancements : Image

DALLE 2, Midjourney, Stable Diffusion

“You don’t need to paint  
for a painting, anymore.

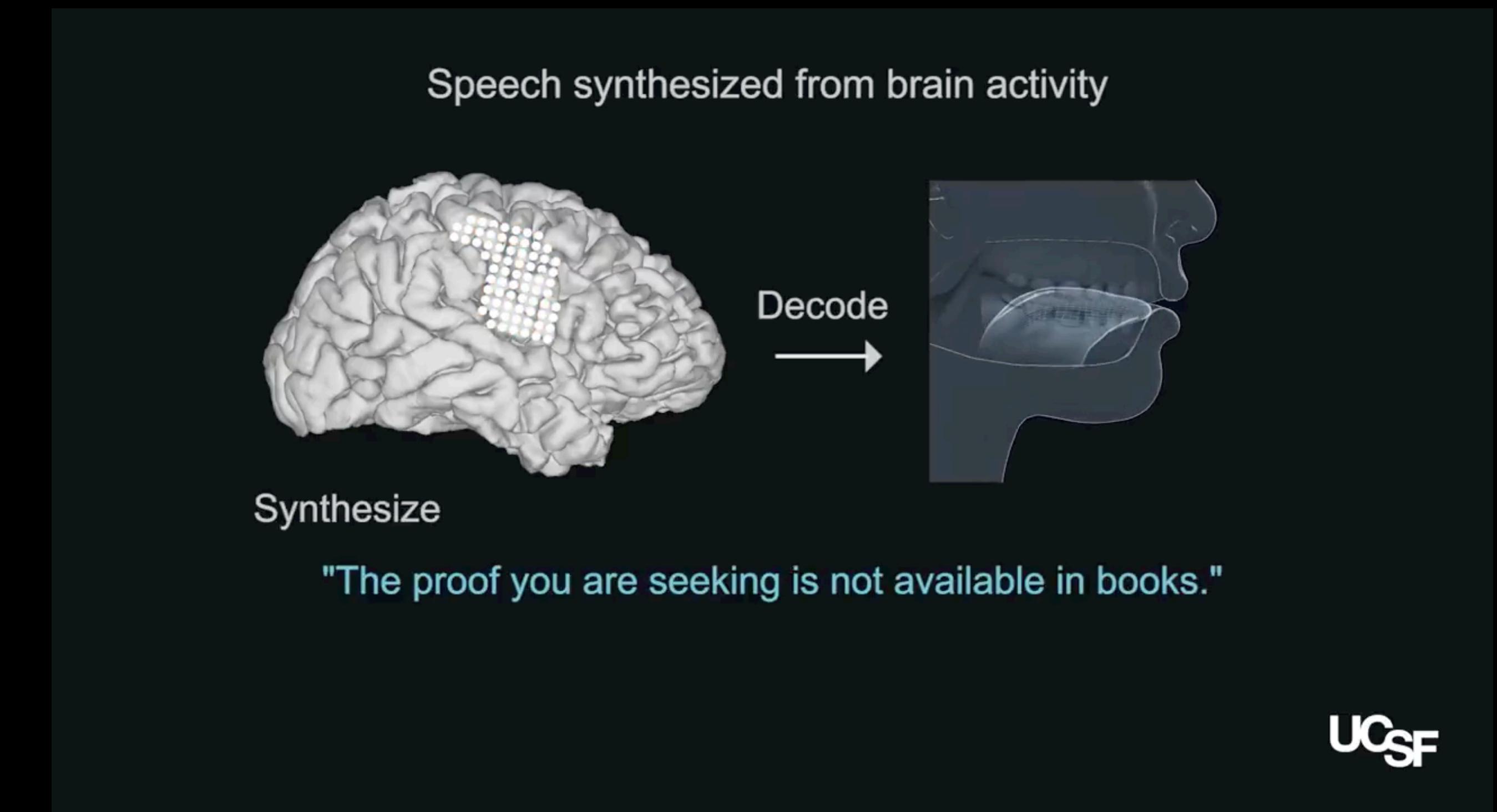
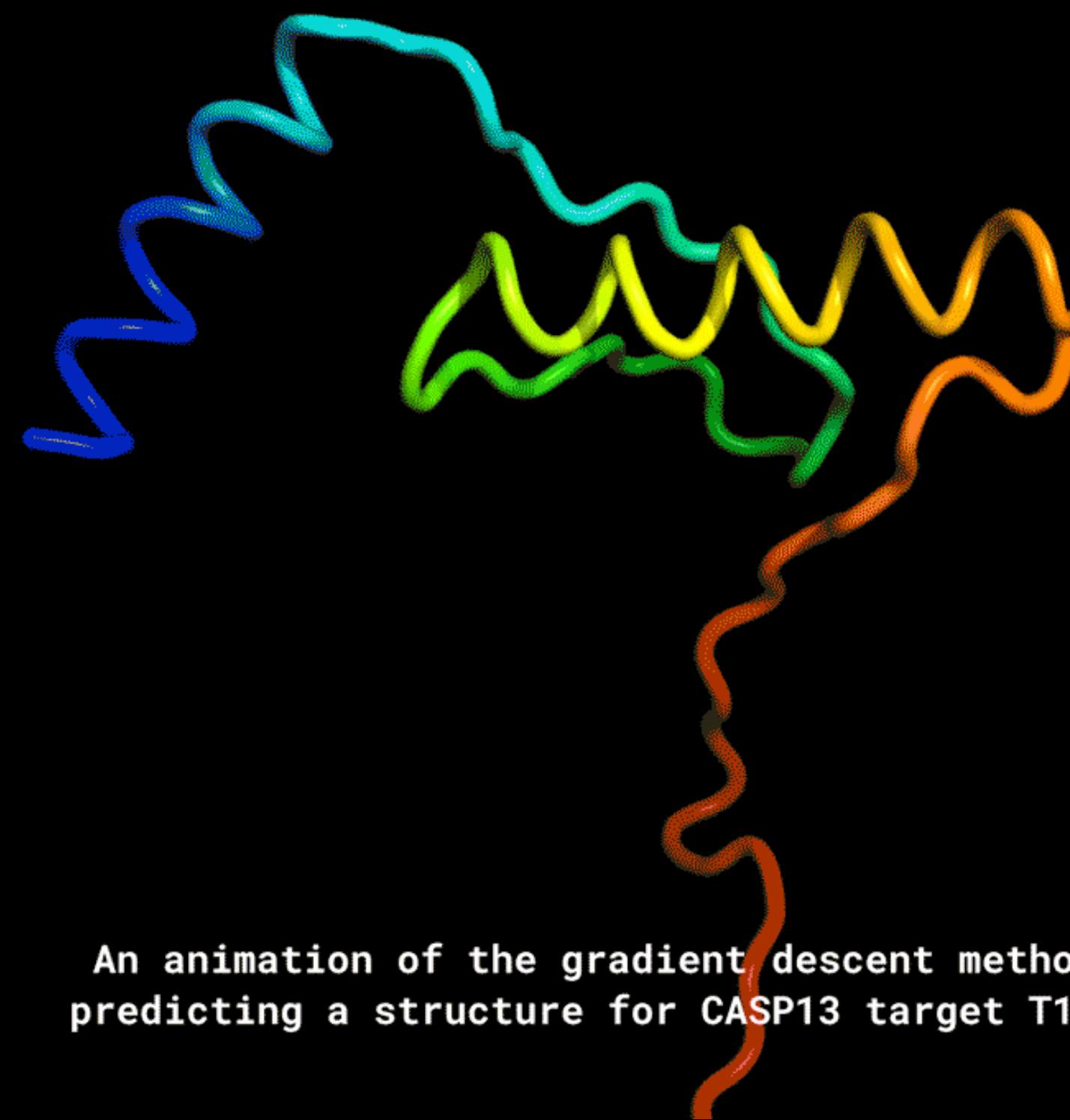
You can just type.”

- Anonymous

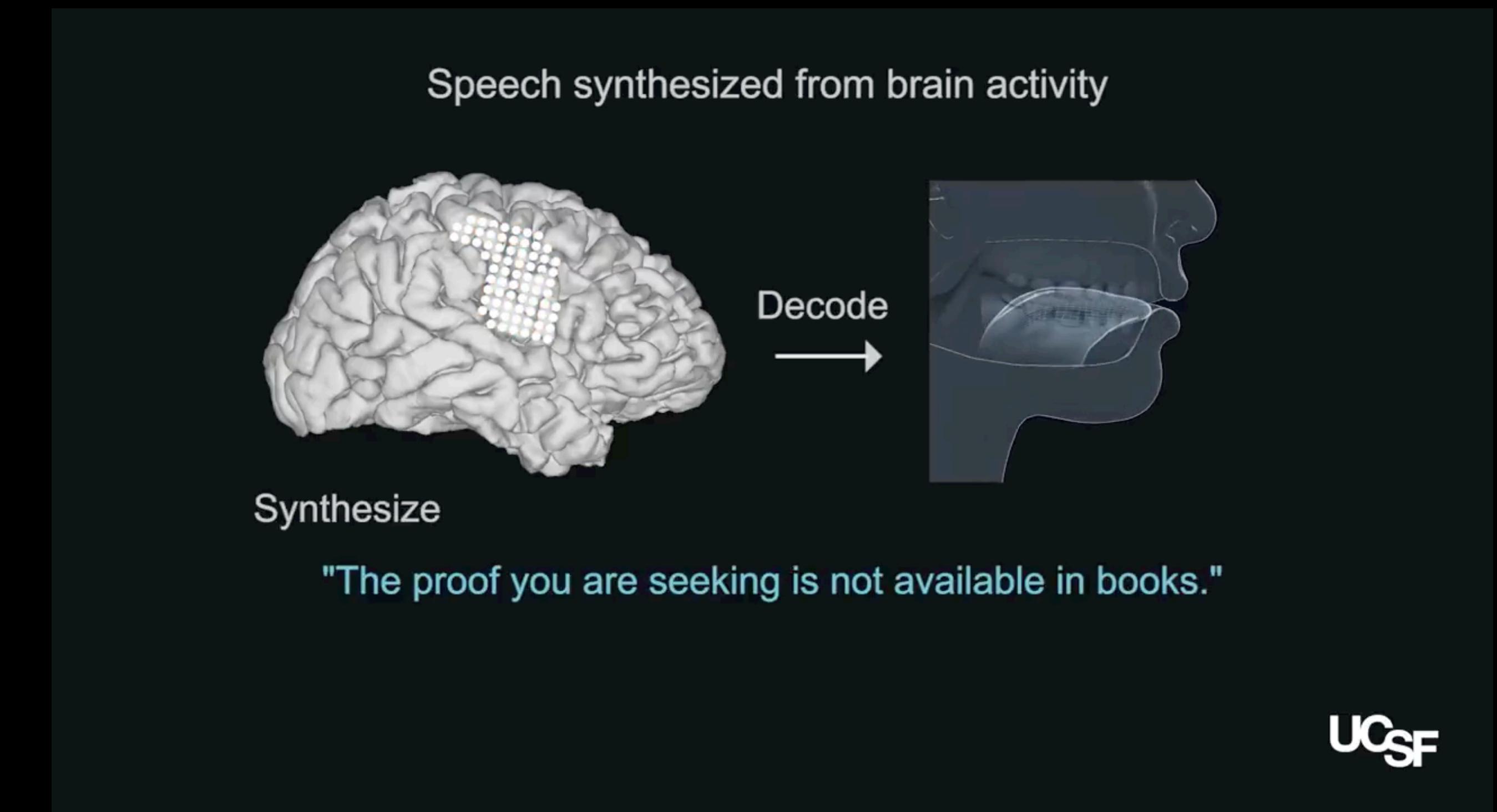
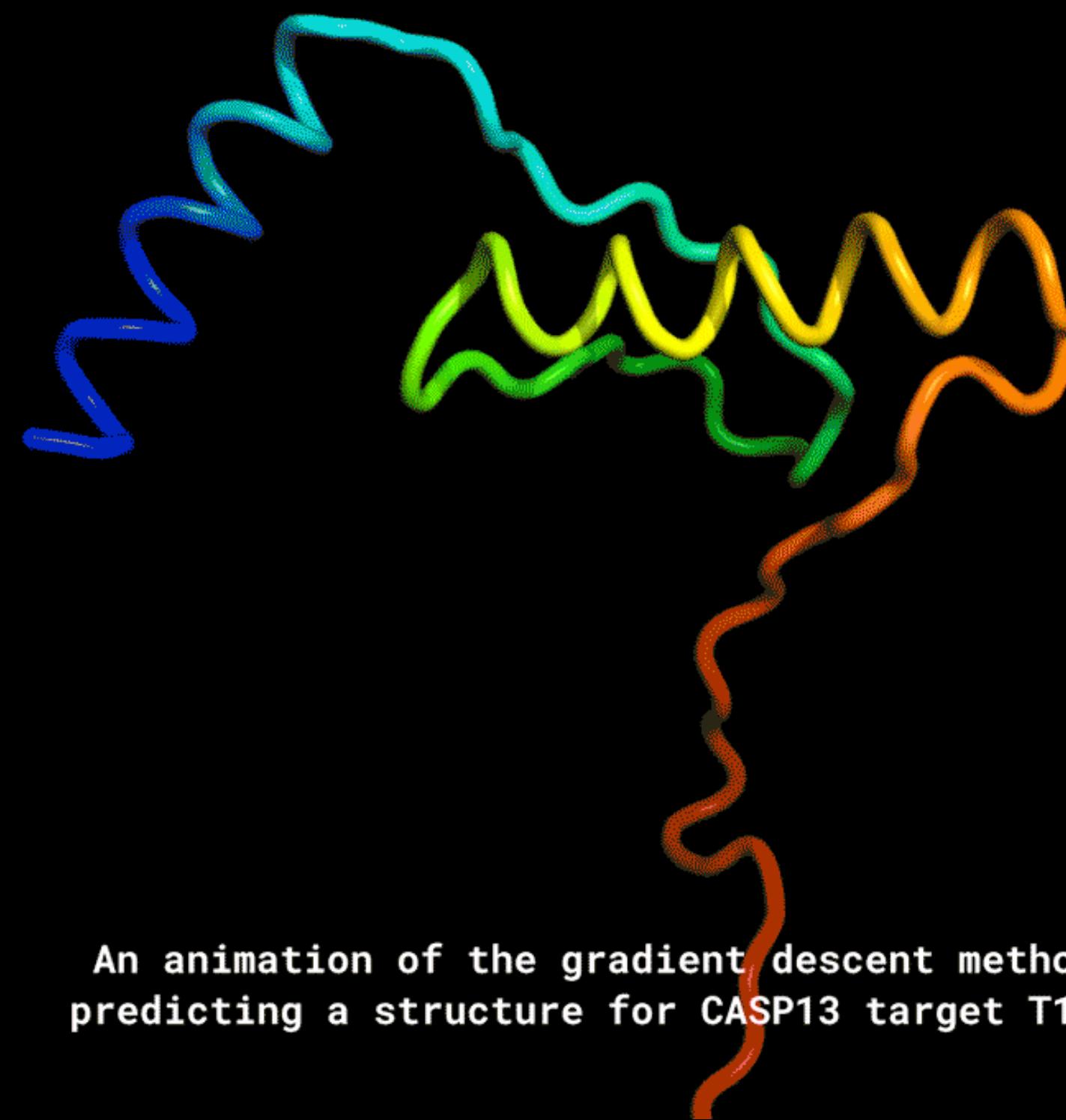


John Snow sitting on the iron throne

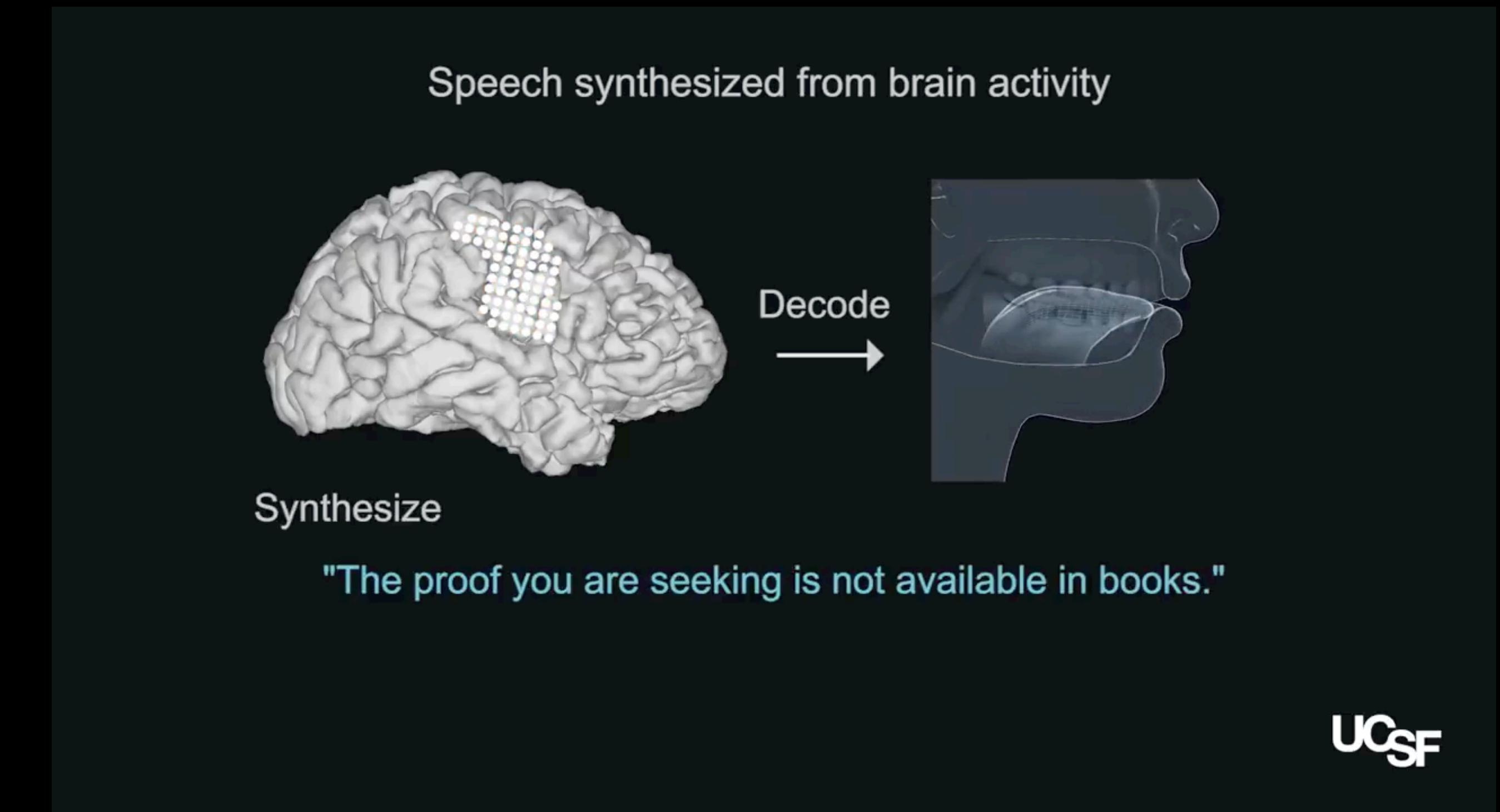
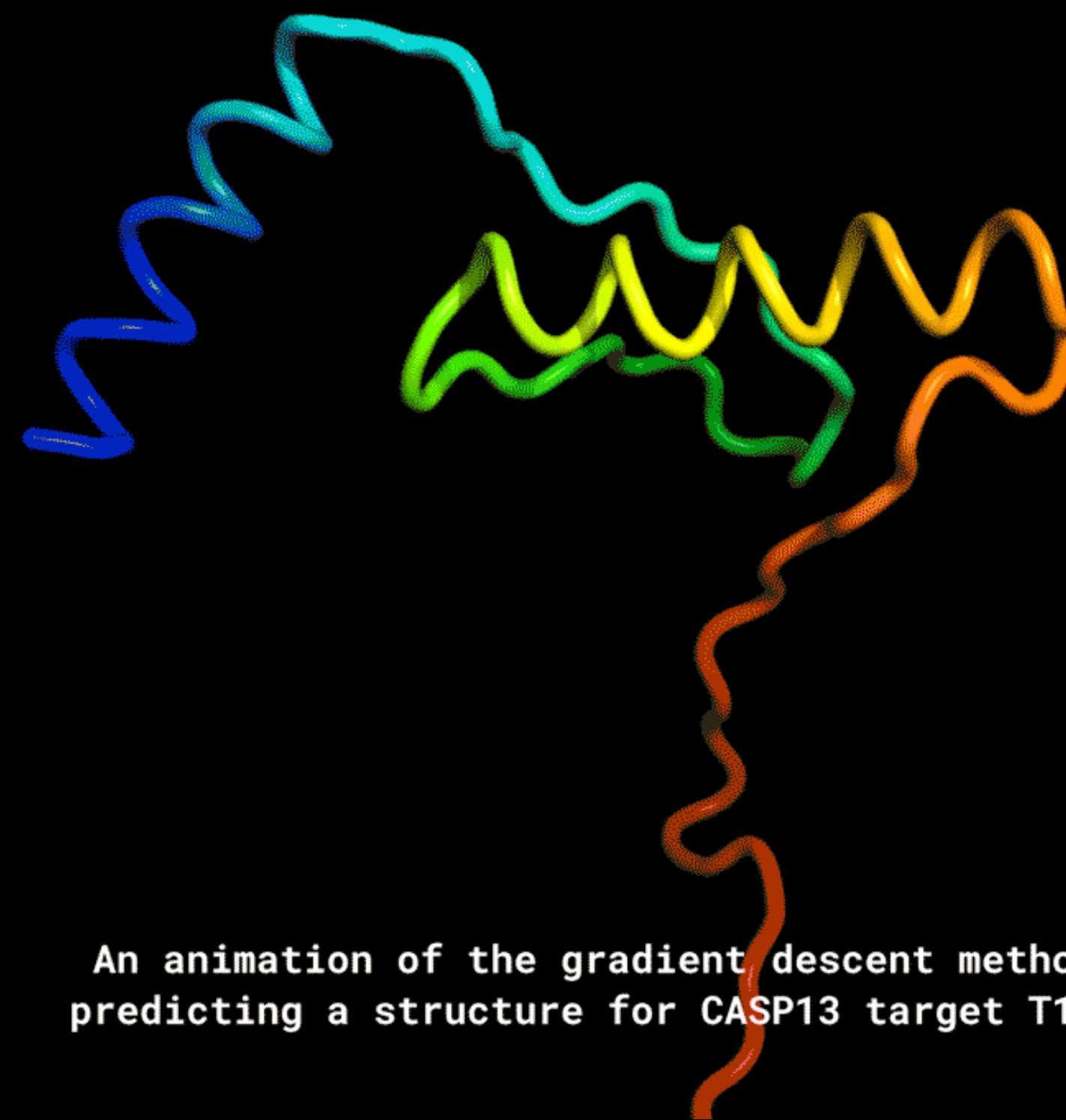
# Recent ML Advancements : Other Fields



# Recent ML Advancements : Other Fields

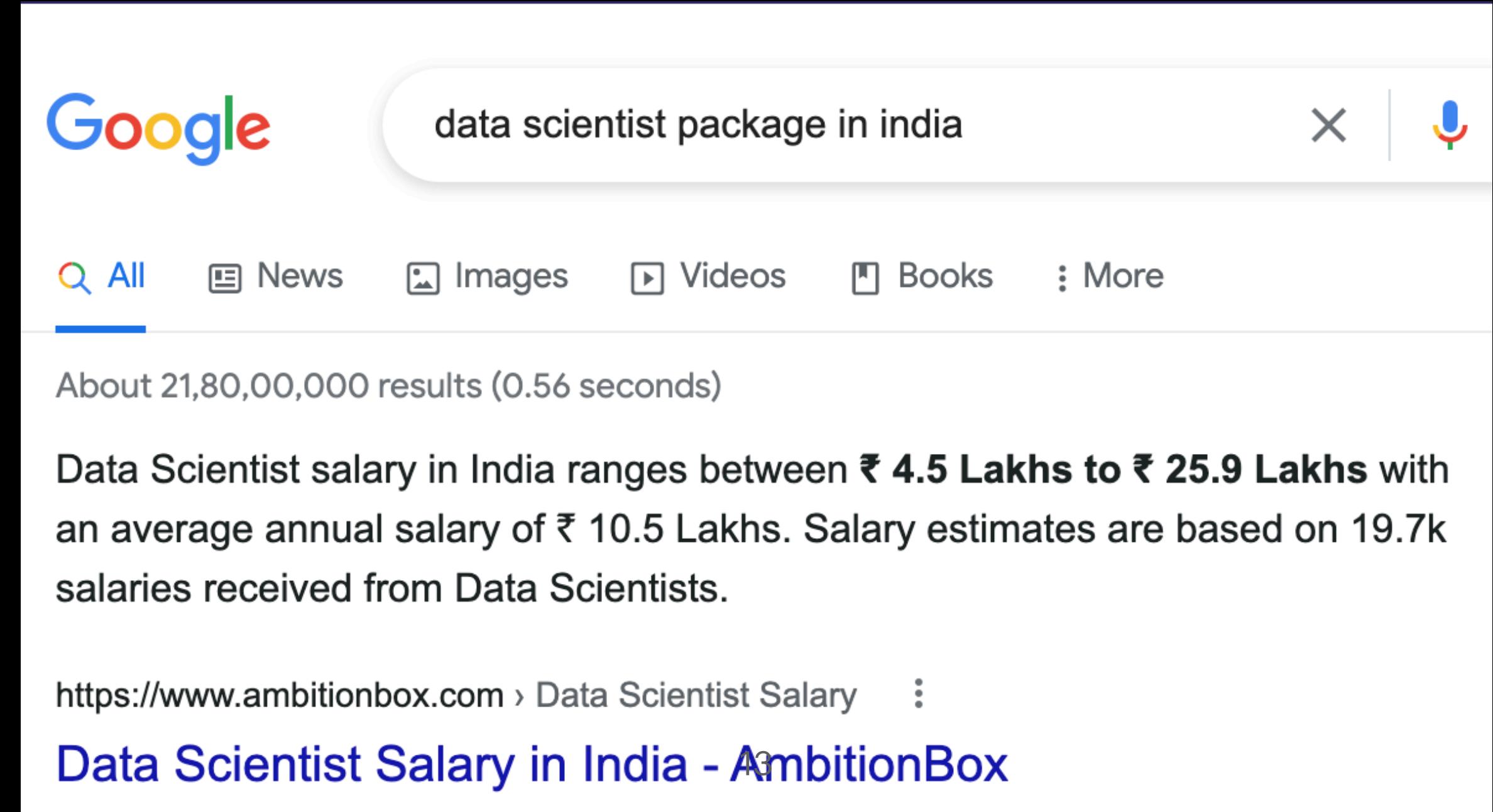


# Recent ML Advancements : Other Fields



# What next?

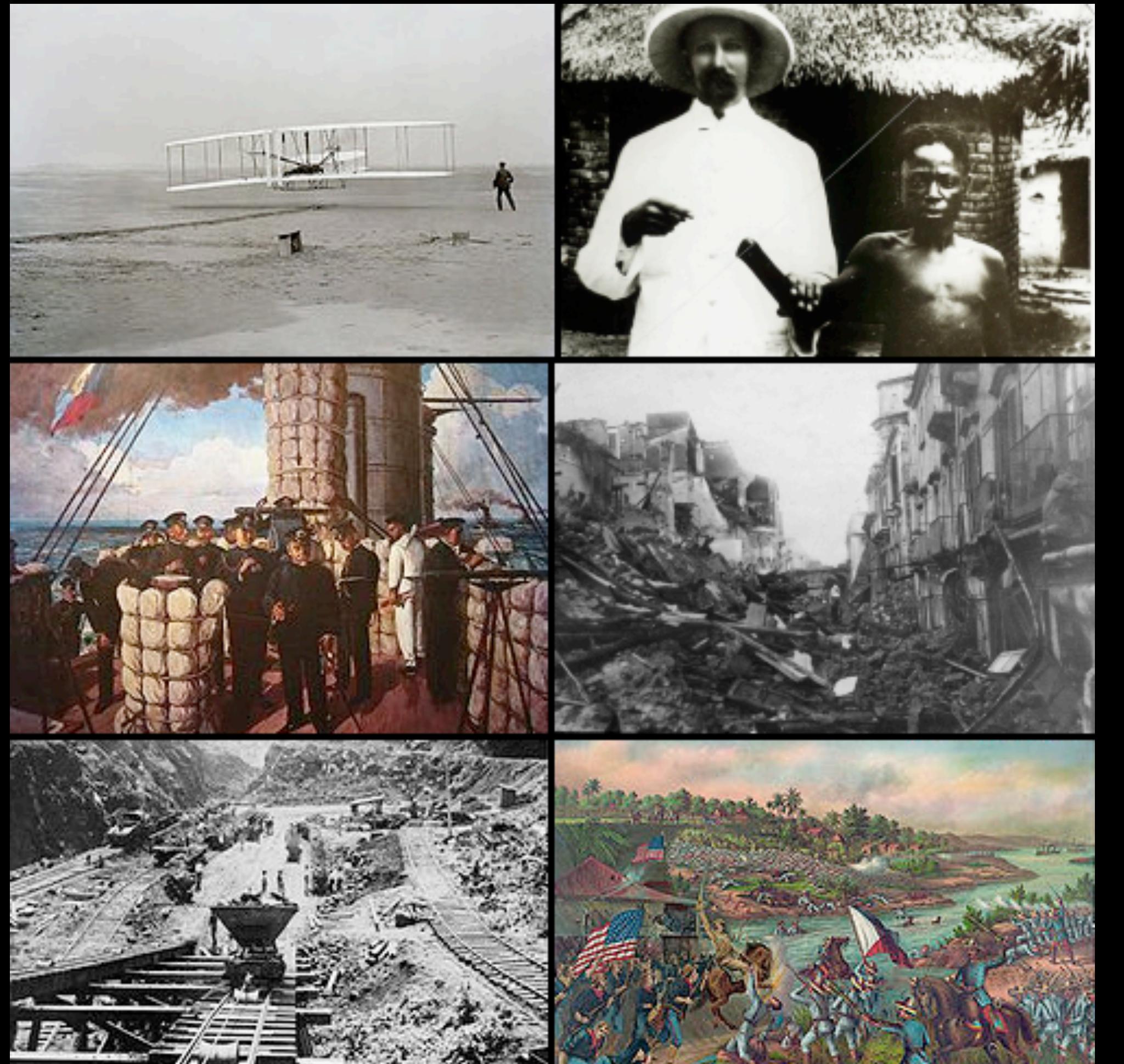
- We can never stop the advancements.
- We need to learn and update.
- The conventional jobs are getting obsolete.
- And, the new hot jobs are appearing.



A screenshot of a Google search results page. The search query "data scientist package in india" is entered in the search bar. Below the search bar, there are tabs for All, News, Images, Videos, Books, and More. A blue underline is under the "All" tab. The search results summary states "About 21,80,00,000 results (0.56 seconds)". Below this, a snippet of text from ambitionbox.com says: "Data Scientist salary in India ranges between ₹ 4.5 Lakhs to ₹ 25.9 Lakhs with an average annual salary of ₹ 10.5 Lakhs. Salary estimates are based on 19.7k salaries received from Data Scientists." At the bottom of the snippet, there is a link "https://www.ambitionbox.com › Data Scientist Salary" followed by three dots, and the text "Data Scientist Salary in India - AmbitionBox".

# What next?

# What next?



# What next?



# What next?



# What next?



# What next?

- Full stack Engineer
- ML Engineer
- Data Scientist
- Space systems
- Big Data

JA

# What is this course about?

# What is this course about?

- The Whys ?

# What is this course about?

- The Whys ?
- To inform you about the tech behind the advancements

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry
  - To make you a better engineer and researcher

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry
  - To make you a better engineer and researcher
- The Whats ?

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry
  - To make you a better engineer and researcher
- The Whats ?
  - We will discuss about signal processing (image, text, audio, speech).

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry
  - To make you a better engineer and researcher
- The Whats ?
  - We will discuss about signal processing (image, text, audio, speech).
  - Generalize it to any domain.

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry
  - To make you a better engineer and researcher
- The Whats ?
  - We will discuss about signal processing (image, text, audio, speech).
  - Generalize it to any domain.
  - How Machine Learning helps us solve these problems.

# What is this course about?

- The Whys ?
  - To inform you about the tech behind the advancements
  - To guide you towards it, if you want to explore
  - To help you understand what's going on the world, academia and industry
  - To make you a better engineer and researcher
- The Whats ?
  - We will discuss about signal processing (image, text, audio, speech).
  - Generalize it to any domain.
  - How Machine Learning helps us solve these problems.
  - The math behind them, and building the models ourselves.

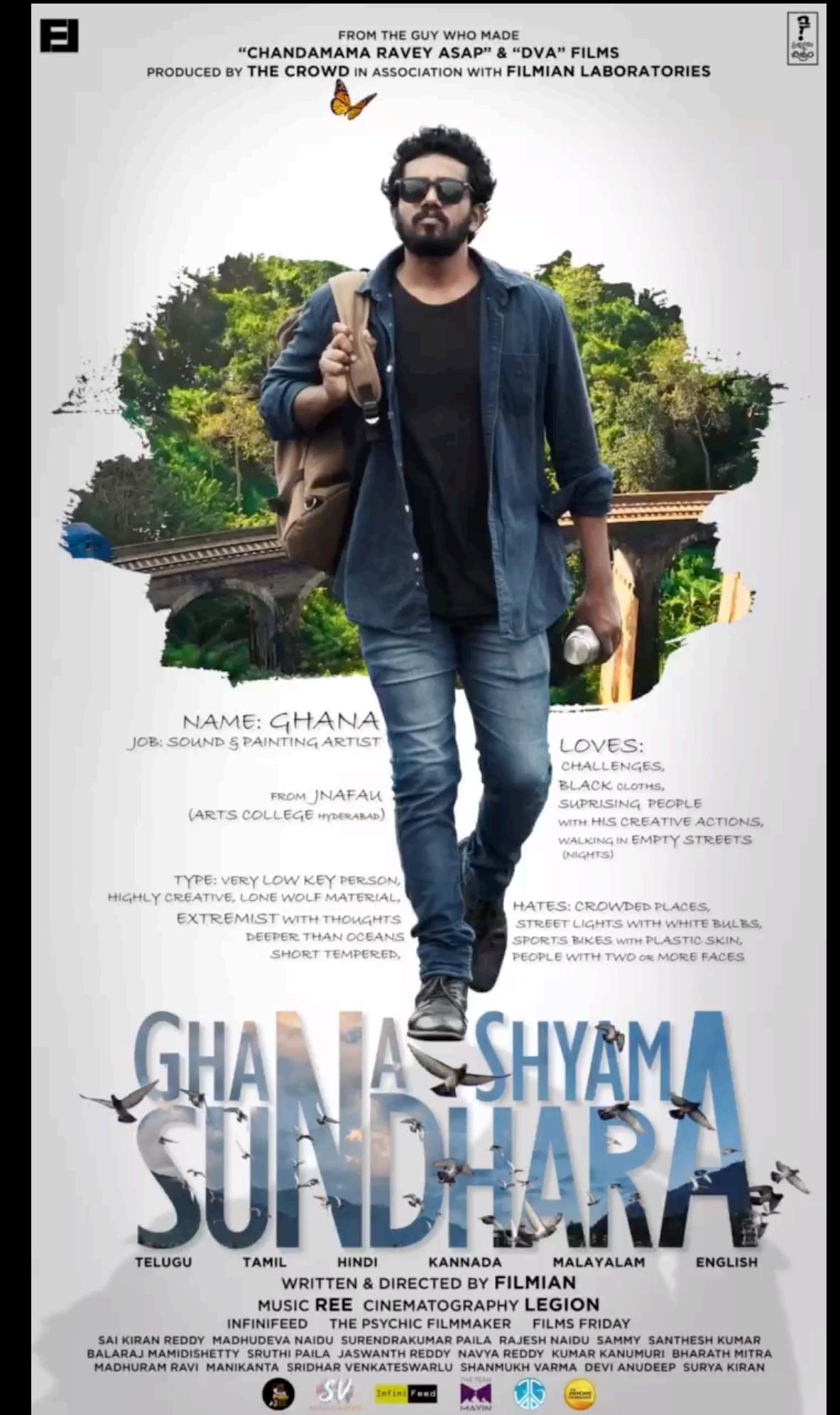
# About me

# About me

- Alumnus of JNTU
- M.Tech (Research) in ML and SP @ EE, IISc
- Computational Neuroscience
- Deep Learning
- R&D ML Engineer

# About me

- Alumnus of JNTU
- M.Tech (Research) in ML and SP @ EE, IISc
- Computational Neuroscience
- Deep Learning
- R&D ML Engineer
- Movies



# About me

- Alumnus of JNTU
- M.Tech (Research) in ML and SP @ EE, IISc
- Computational Neuroscience
- Deep Learning
- R&D ML Engineer
- Movies
- Theatre
- Philosophy
- Sci-fi



# About me

- Alumnus of JNTU
- M.Tech (Research) in ML and SP @ EE, IISc
- Computational Neuroscience
- Deep Learning
- R&D ML Engineer
- Movies
- Theatre
- Philosophy
- Sci-fi
- Blunt and Honest



# Class Survey

# Class Survey

- Mandatory

# Class Survey

- Mandatory
- Only 80 submissions yet

# Class Survey

- Mandatory
- Only 80 submissions yet
- Highlight something about yourself which stands out, and how you can contribute to the sessions.

# Class Survey

- Mandatory
- Only 80 submissions yet
- Highlight something about yourself which stands out, and how you can contribute to the sessions.
- Cover letter :Why do you want to attend the sessions, and what makes you suitable to the sessions?

# Class Survey

- Mandatory
- Only 80 submissions yet
- Highlight something about yourself which stands out, and how you can contribute to the sessions.
- Cover letter :Why do you want to attend the sessions, and what makes you suitable to the sessions?
- Describe ONE project you would want to complete before your bachelors ends. (or in your life)

# Class Survey

- Mandatory
- Only 80 submissions yet
- Highlight something about you in the sessions.
- Cover letter :Why do you want to attend the sessions?
- Describe your interest in machine learning

I am very passionate in learning ML.  
400 wordsiam interested in doing projects on machine

.. at the sessions,

I can try my best

.. want to complete before

I am very fast learner

C I am interested

# RoadMap

Research papers and Industry problems

Kaggle Competitions

Machine Learning Algorithms

Signal Processing

Deep Learning Libraries

Optimization Theory

Machine Learning Libraries

Random Variables

Object Oriented Programming

Scripting Languages

Linear Algebra

# What we expect

- Regular attendance
- Regular submission of assignments
- Interaction during the sessions
- Respecting the time and effort we are putting in guiding you
- Not through words, but through your actions
- Atleast 10 students with live working projects by the session ends

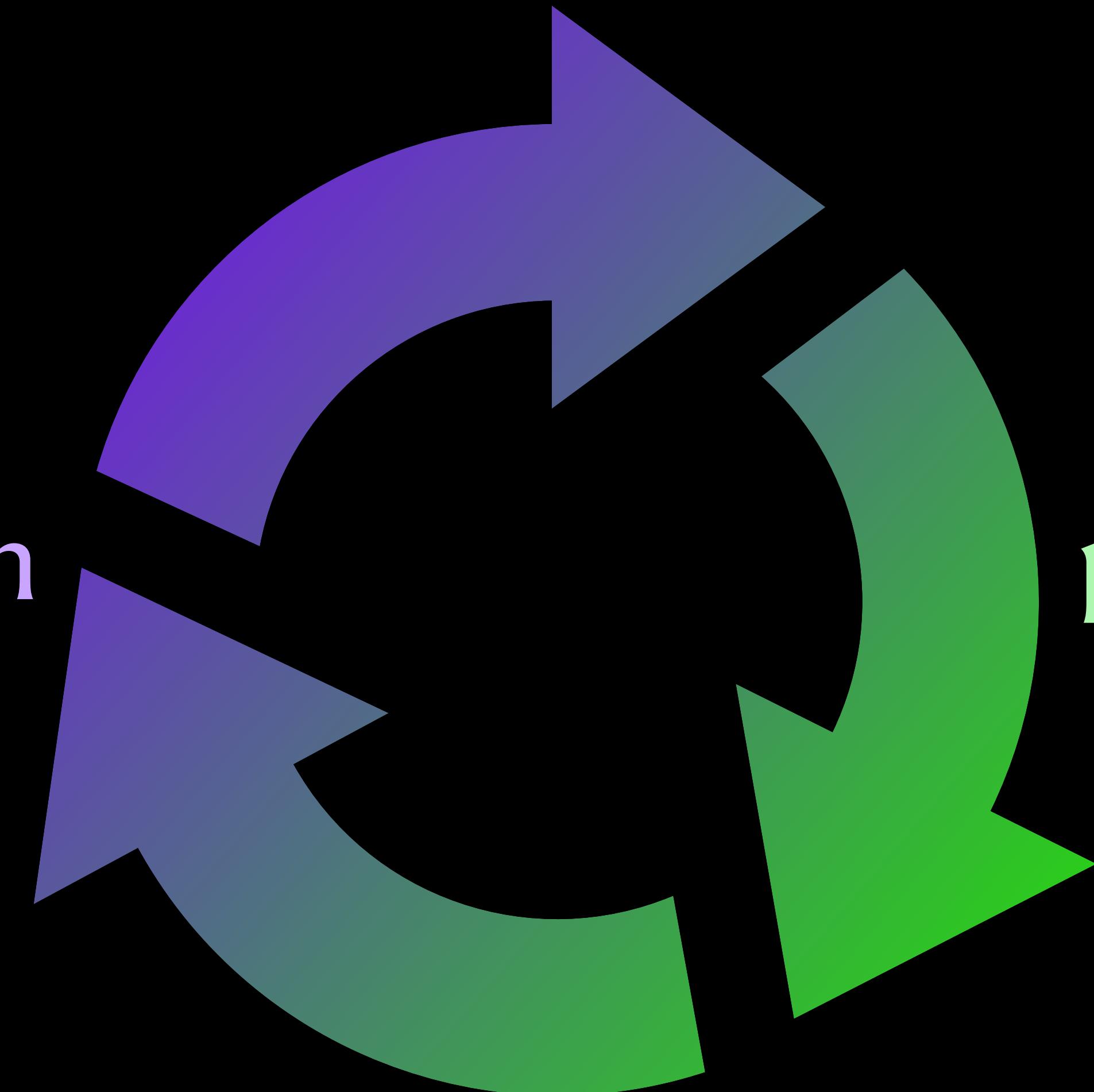
# Incentives for active participation

- Jobs in startup I am starting a startup soon
- Internship opportunities at high end ML labs in IISc, IIT Guwahati, IIT Hyderabad, etc
- Job opportunities at MNCs like Qualcomm, Google, Microsoft
- Research opportunities
- Better resume
- Increase in MS admissions
- My continuous guidance in your projects

# Never Ending Loop

College is not providing enough

Students are not performing enough



# Never Ending Loop

College is not providing enough

Students are not performing enough



# Assignment : Survey

- OpenAI
- Tesla
- Meta - Facebook
- Deepmind
- SpaceX
- Netflix
- Amazon Cloud Services, Google Cloud Platform, Microsoft Azure
- Disney AI/ML Research
- Alexa

See you

Think Big  
Be Creative  
Be Hungry