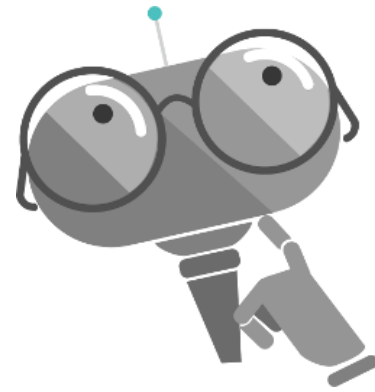


Introduction to AI and Azure Cognitive Services



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Microsoft Student Partners

About me.



Microsoft MVP in AI

Microsoft Student Partner

Web Applications Developer @ ITT Inc.

Blogger

Traveler

Speaker



www.codestories.gr



fb.com/CodeStoriesgr



[georgiakalyva](https://www.linkedin.com/in/georgiakalyva)



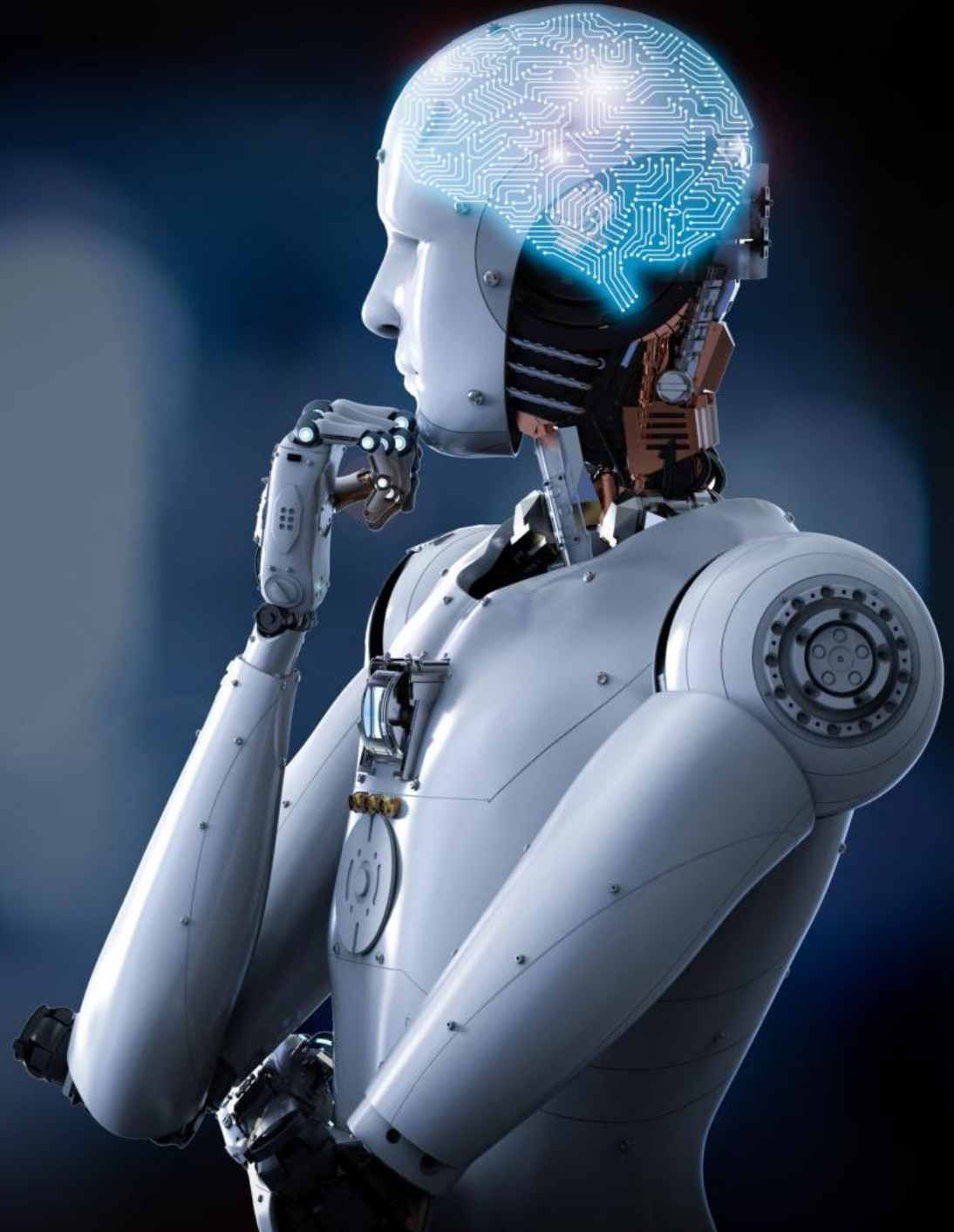
[GeorgiaKalyva](https://github.com/GeorgiaKalyva)



[@GeorgiaKalyva](https://twitter.com/GeorgiaKalyva)

Definition

- Artificial Intelligence is technology that appears to emulate human performance typically by learning, coming to it's own conclusions, appearing to understand complex content, engaging in natural dialogs with people, enhancing human cognitive performance or replacing or supporting people on execution of tasks.



Artificial Intelligence

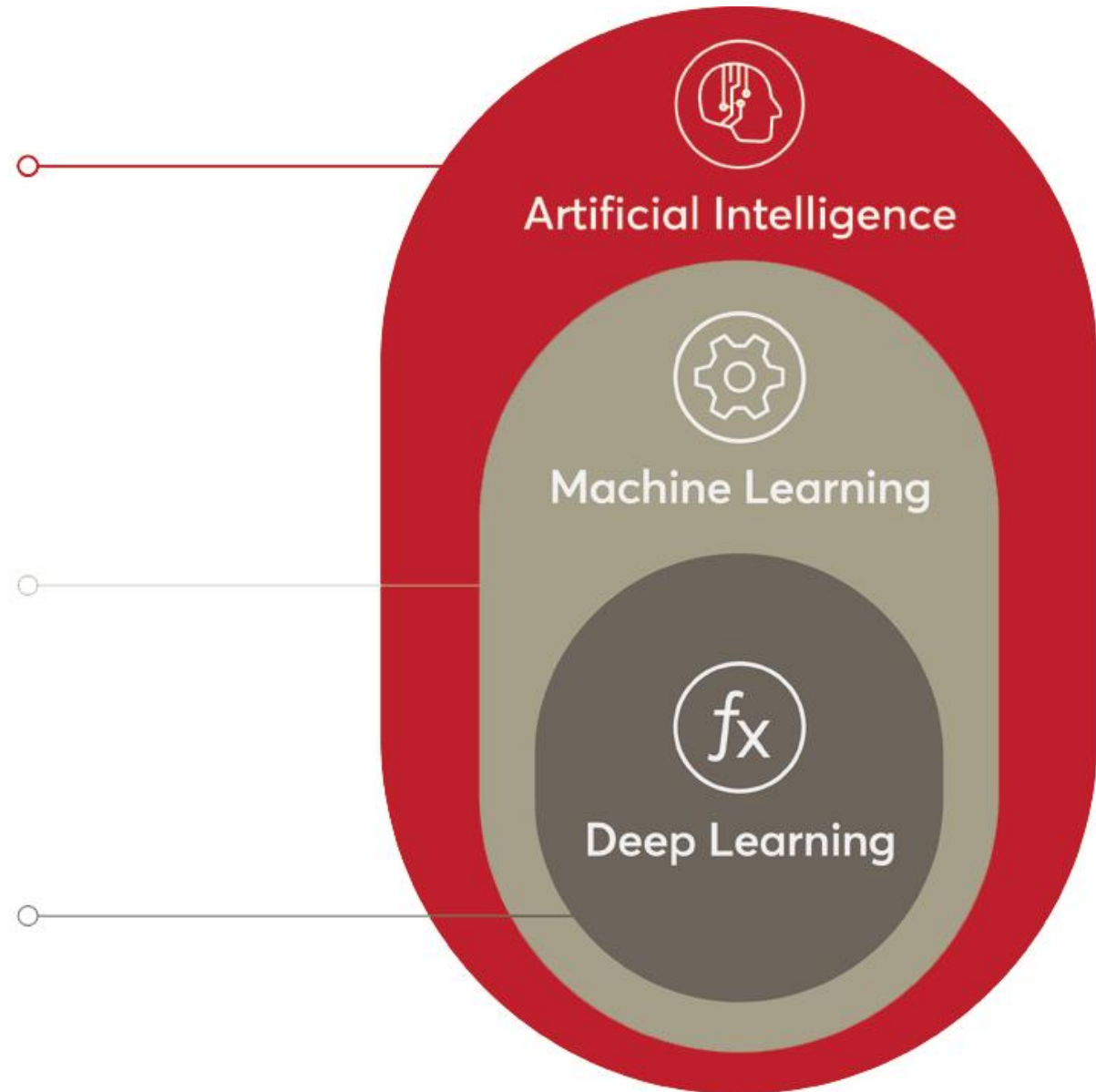
Any technique which enables computers to mimic human behavior

Machine Learning

Subset of AI techniques which use Statistical methods to enable machines to improve with experiences

Deep Learning

Subset of ML which makes the computation of multi-layer neural networks feasible



Artificial
Intelligence

VS

Natural
Intelligence

Non Creative

Precise

Consistent

Multitasking

Fast

Creative

Error – prone

Inconsistent

Universal

Biased



Microsoft AI Principles

Fair | Accountable | Transparent | Ethical

- 1 AI must maximize efficiencies without destroying the dignity of people
- 2 AI must guard against bias
- 3 AI needs accountability so humans can undo unintended harm
- 4 AI must be transparent
- 5 AI must be designed for intelligent privacy
- 6 AI must be designed to assist humanity



Artificial Intelligence Today?

Virtual Personal Assistants

AI
Examples
we use
daily



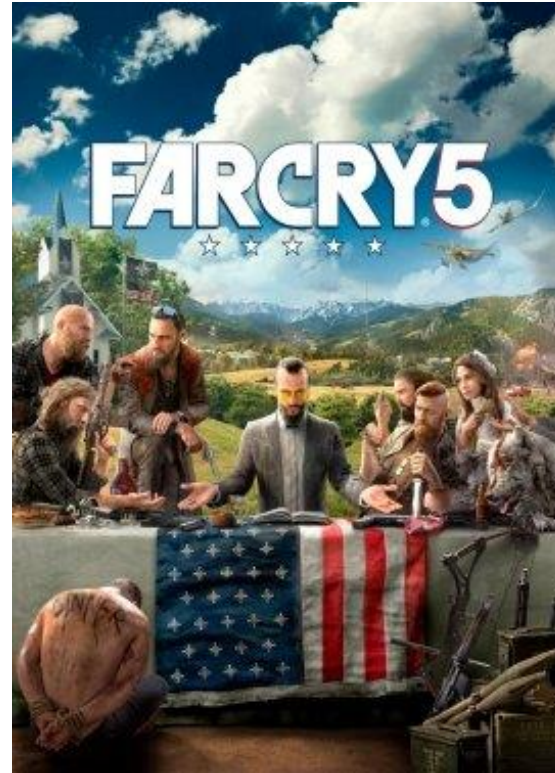
Google Assistant



Hey Cortana

Video Games

AI
Examples
we use
daily



Self-driving Cars

AI
Examples
we use
daily



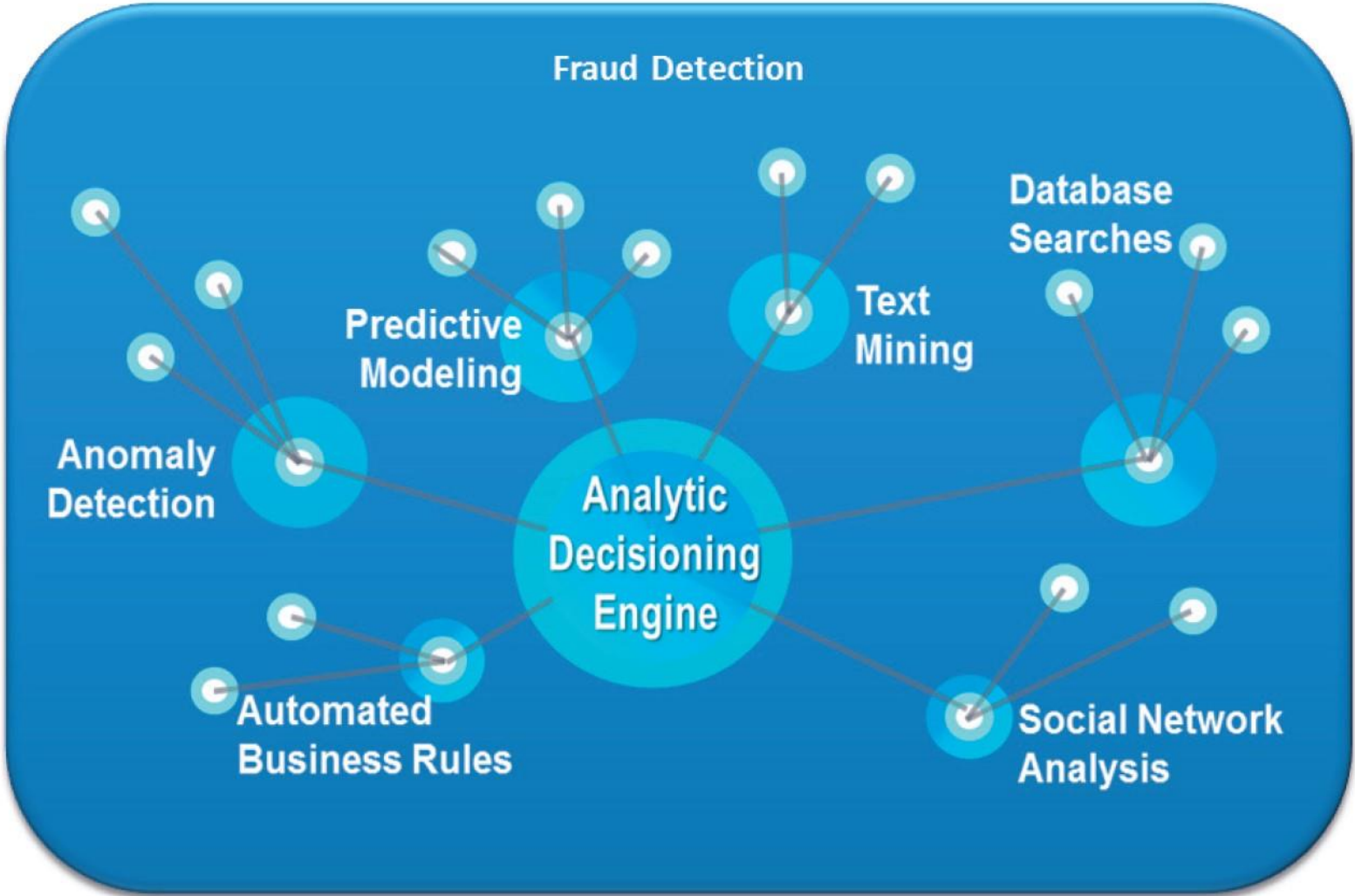
Purchase Prediction



AI
Examples
we use
daily



Fraud Detection



AI
Examples
we use
daily

News Generation

AI
Examples
we use
daily

**LATEST
NEWS**

Security Surveillance

AI
Examples
we use
daily



Music and Movie Recommendation Services

AI
Examples
we use
daily



Smart Home Devices

AI
Examples
we use
daily



Robot Home Devices

AI
Examples
we use
daily



Online Customer Support

AI
Examples
we use
daily

Chatbot, help me find an alternative flight.

Here are the best results based on your trip.

From Dallas (DFW)
to New York (JFK)
departing at 10:20 AM
arriving at 2:52 PM

[See All Results](#)



Conversations as a Platform



Human language is the new UI



Digital assistants

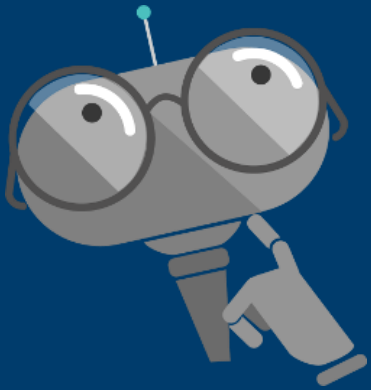


Bots are the new apps



Bots.

What is a bot?



An application that performs one or more automated tasks.

Bots uses conversation as the interface for both internally-facing (employees) and externally-facing (customers) scenarios.

[Conversational Apps](#) are an application category of AI-based solution.

Examples of Conversational Apps

Internal Bots

Experiment and Learn

Internal Knowledge

Take existing FAQs and empower staff to provide self-serve knowledge via Bot.

IT Helpdesk

Report an IT problem and check the status. Bot can provide self-help and escalation to engineer if required.

Smart Document Agent

Search of relevant documents based on the user's needs.

Simple Customer Bots

Unauthenticated Services

General Enquiries

Handle basic customer enquiries traditionally hidden in FAQs.

Appointment Booking

Handle simple "anonymous" tasks via chat (i.e., booking an appointment)

Complex Enquiries

For requests that a Bot cannot complete hand off to a human agent.

Advanced Bots

Authenticated Services

Account Enquiry

Handle enquiries that require identification of the customer (i.e., account balance enquiry)

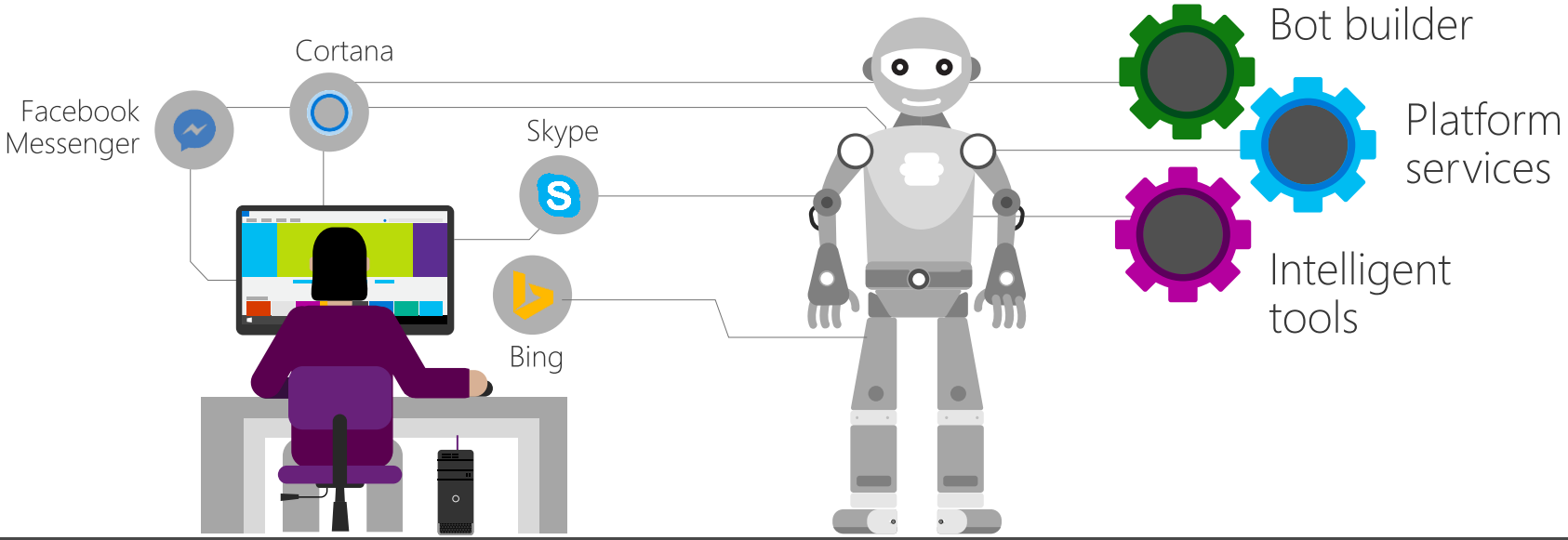
Make Payment

Perform actions that require a user to be authenticated and authorized, e.g. make payment to predefined payee.

Retail-bot

Send a customer with a new device to a stall to help them set up their services.

Why a bot?

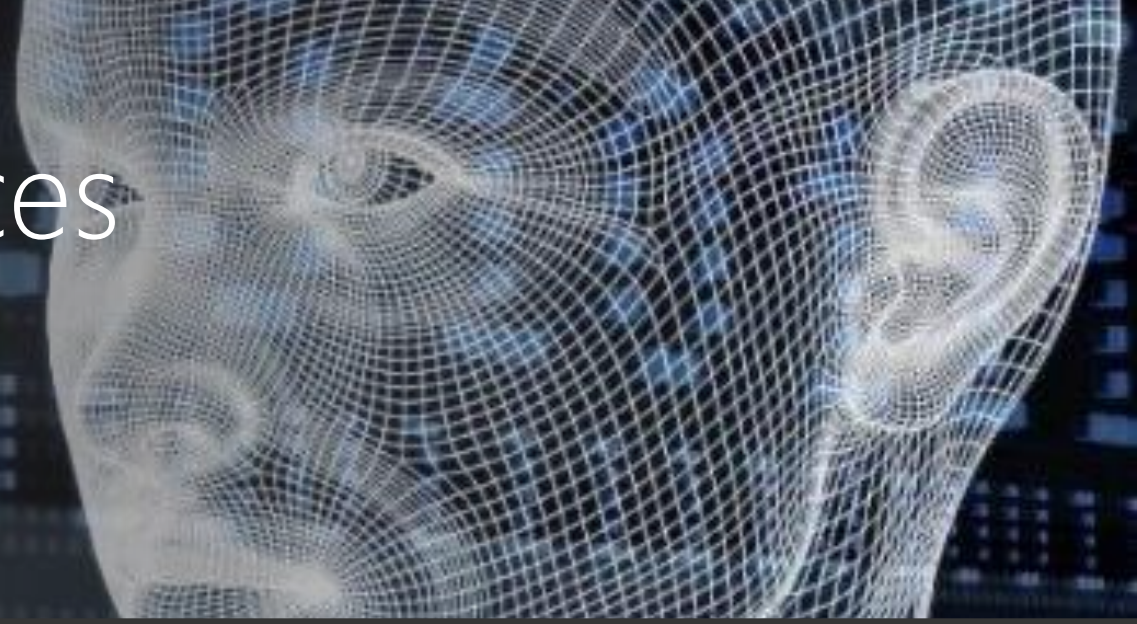




App Intelligence.

Microsoft Cognitive Services

Give your apps a human side



A set of ready to use APIs for every developer to use without requiring machine-learning expertise

Microsoft Cognitive Services

Give your apps a human side



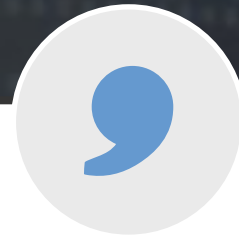
Vision

Computer Vision
Emotion
Face
Video Indexer
Custom Vision
Form Recognizer



Speech

Speech to Text
Text to Speech
Speech Translation
Speech Recognition



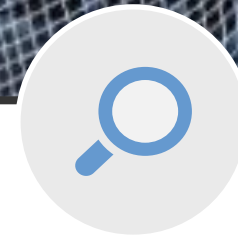
Language

Immersive Reader
Language Understanding
QnA Maker
Translator Text & Speech
Text Analytics



Decision

Anomaly Detector
Content Moderator
Personalizer



Search

Bing Autosuggest
Bing Image Search
Bing News Search
Bing Video Search
Bing Web Search
Bing Custom Search
Bing Spell Check



Vision

Computer Vision

Emotion

Face

Video Indexer

Custom Vision

Form Recognizer

Computer vision




Type of Image:

Clip Art Type 0 Non-clipart
Line Drawing Type 0 Non-Line Drawing
Black & White Image False

Content of Image:

Categories [{"name": "people_swimming", "score": 0.099609375 }]
Adult Content False
Adult Score 0.18533889949321747
Faces [{"age": 27, "gender": "Male", "faceRectangle": {"left": 472, "top": 258, "width": 199, "height": 199}}]

Image Colors:

Dominant Color Background White
Dominant Color Foreground Grey
Dominant Colors White
Accent Color 



Vision

Computer Vision

Emotion

Face

Video Indexer

Custom Vision

Form Recognizer

Content Moderator

- Detection of **potential offensive** and **unwanted images**
- Filtering of possible **profanity** and **undesirable text**
- Moderation of **adult and racy content** in videos
- Built-in review tool for best results



Vision

Computer Vision

Emotion

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Emotion API

The screenshot displays the Microsoft Emotion API interface. At the top, a yellow box highlights a child's face with the label "Surprise". Below the image, a teal bar contains a camera icon, an upload icon, and a progress bar for the detected emotion. The progress bar shows "Surprise" at approximately 80% intensity. To the right of the progress bar, there are labels for other emotions: "Neutral", "Happiness", "Sadness", "Anger", "Disgust", "Fear", and "Contempt", each with a corresponding progress bar. A small thumbnail of the child's face is visible on the right side of the teal bar. The Microsoft logo and the text "Get started for free at projectoxford.ai" are located in the bottom right corner.

Emotion	Intensity
Neutral	0%
Happiness	0%
Surprise	80%
Sadness	0%
Anger	0%
Disgust	0%
Fear	0%
Contempt	0%



Vision

Computer Vision

Emotion

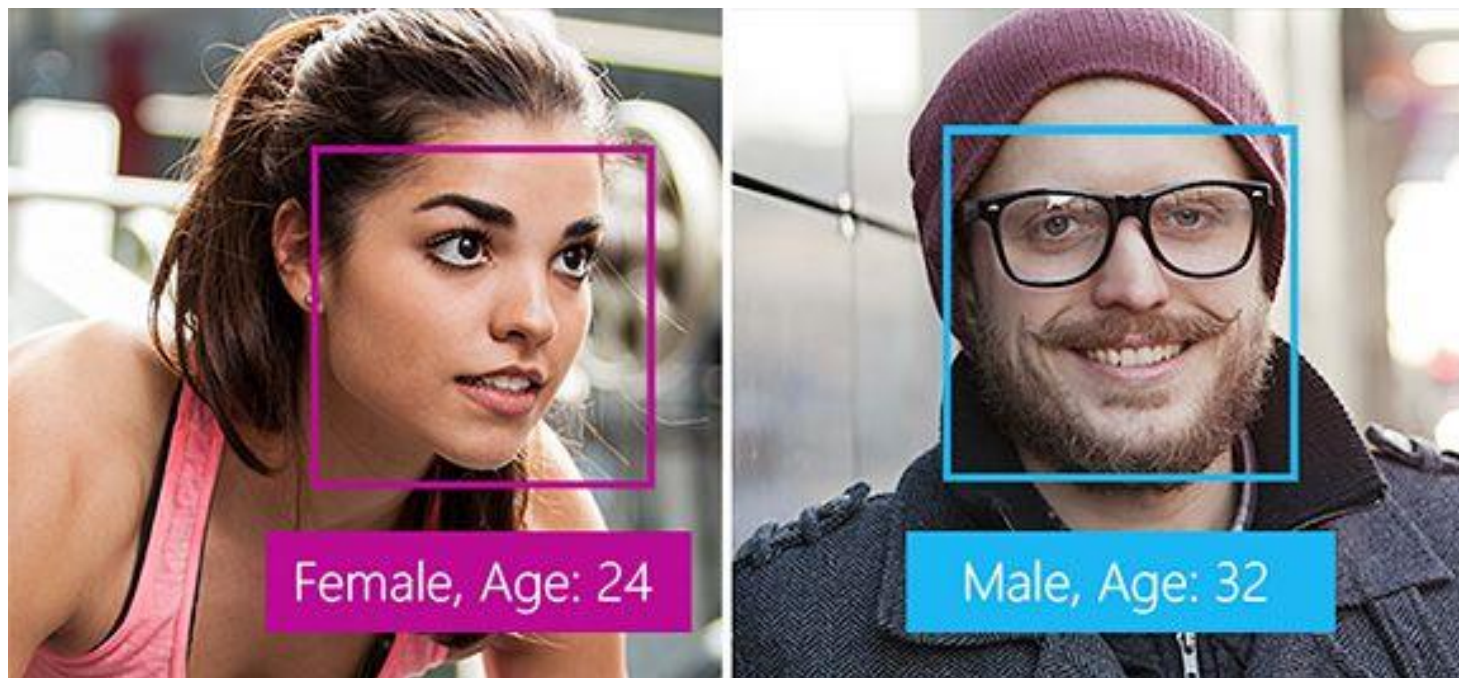
Face

Video Indexer

Custom Vision

Form Recognizer

Face API





Vision

Computer Vision

Emotion

Face

Video Indexer

Custom Vision

Form Recognizer

Video Indexer



People

Satya Nadella ^o
Microsoft CEO
Show biography Find in Bing

Appears for a total of 53% of the entire duration

00:57:11

Speech Sentiment

- Neutral (36%)
- Positive (61%)
- Negative (3%)

Keywords

data drivers cognitive services action
neural network framework crm press opportunity

Form Recognizer



Vision

Computer Vision
Emotion
Face
Video Indexer
Custom Vision
Form Recognizer

Item ID	Description	Qty	Unit Price	Discount	Price
245C1	Invoice 3-456-1 Data 1	20	5.00	5	950.00
245C2	Invoice 3-456-2 Data 2	80	4.00	5.00	3120.00
245C3	Invoice 3-456-3 Data 3	10	6.00	7.00	470.00
245C4	Invoice 3-456-4 Data 4	40	7.00	-	2800.00
245C5	Invoice 3-456-5 Data 5	20	4.00	-	800.00
245C6	Invoice 3-456-6 Data 6	5	8.00	-	40.00
245C7	Invoice 3-456-7 Data 7	70	6.00	-	4200.00
245C8	Invoice 3-456-8 Data 8	20	6.00	-	1200.00
245C9	Invoice 3-456-9 Data 9	5	7.00	1.00	30.00
245C10	Invoice 3-456-10 Data 10	30	3.00	-	90.00
245C11	Invoice 3-456-11 Data 11	60	7.00	-	4200.00
245C12	Invoice 3-456-12 Data 12	40	1.00	-	400.00

- Key-value pairs
- Table Data



Speech

Speech to Text

Text to Speech

Speech Translation

Speech
Recognition

Speaker Verification

Use your voice for verification. The API can be used to power applications with an intelligent verification tool. If the speaker claims to be of a certain identity use voice to verify this claim.

Speaker Identification

Identify who is speaking. The API can be used to determine the identity of an unknown speaker.

Speech Translation



Speech

Speech to Text

Text to Speech

Speech Translation

Speech
Recognition

- A cloud-based automatic translation service
- Real-time transcription and translation





Language

Immersive Reader

Language

Understanding

QnA Maker

Translator Text &
Speech

Text Analytics

Immersive Reader

The screenshot shows a web browser window displaying a document titled "Geography.docx". The document content is "The study of Earth's land·forms is **is** called phys·i·cal ge·og·ra·phy. Land·forms can **be** moun·tains and val·leys. They can al·so **be** glac·i·ers, lakes or riv·ers. Land·forms **are**". The text is displayed with syllable boundaries and color-coded parts of speech. A sidebar on the right contains a menu with options: SyHables (selected), Nouns, Verbs, and Adjectives. The interface also includes a play button at the bottom center and a taskbar at the bottom with the "Ask me anything" search bar and system tray icons.



Language

Immersive Reader

Language Understanding

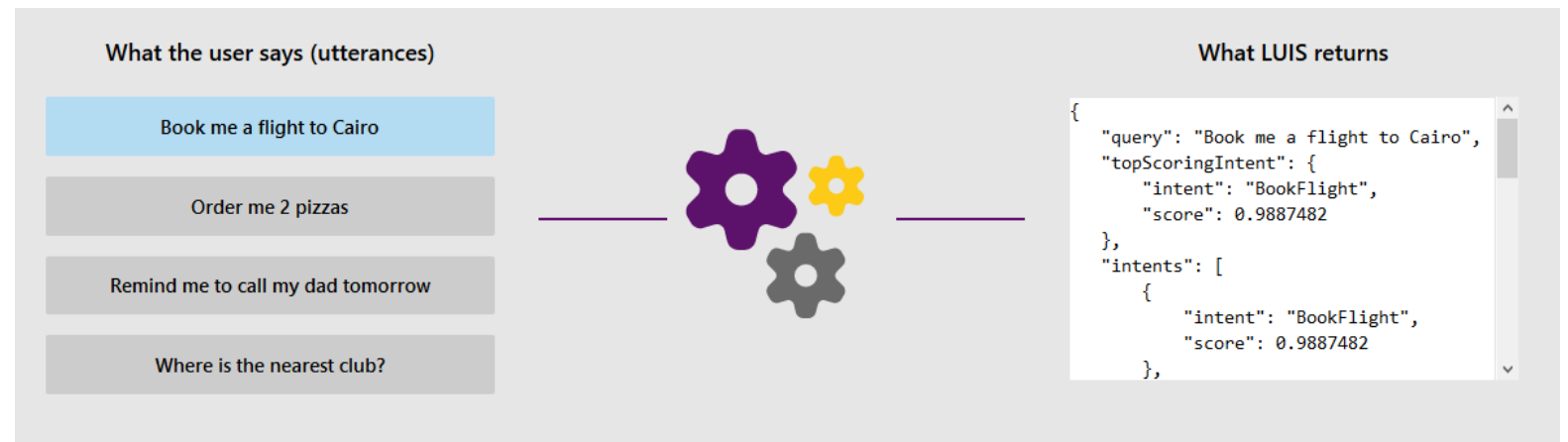
QnA Maker

Translator Text & Speech

Text Analytics

Language Understanding

A machine learning-based service to build natural language into apps by creating custom models





Language

Immersive Reader

Language
Understanding

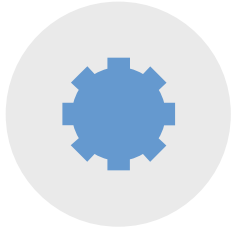
QnA Maker

Translator Text &
Speech

Text Analytics

QnA Maker

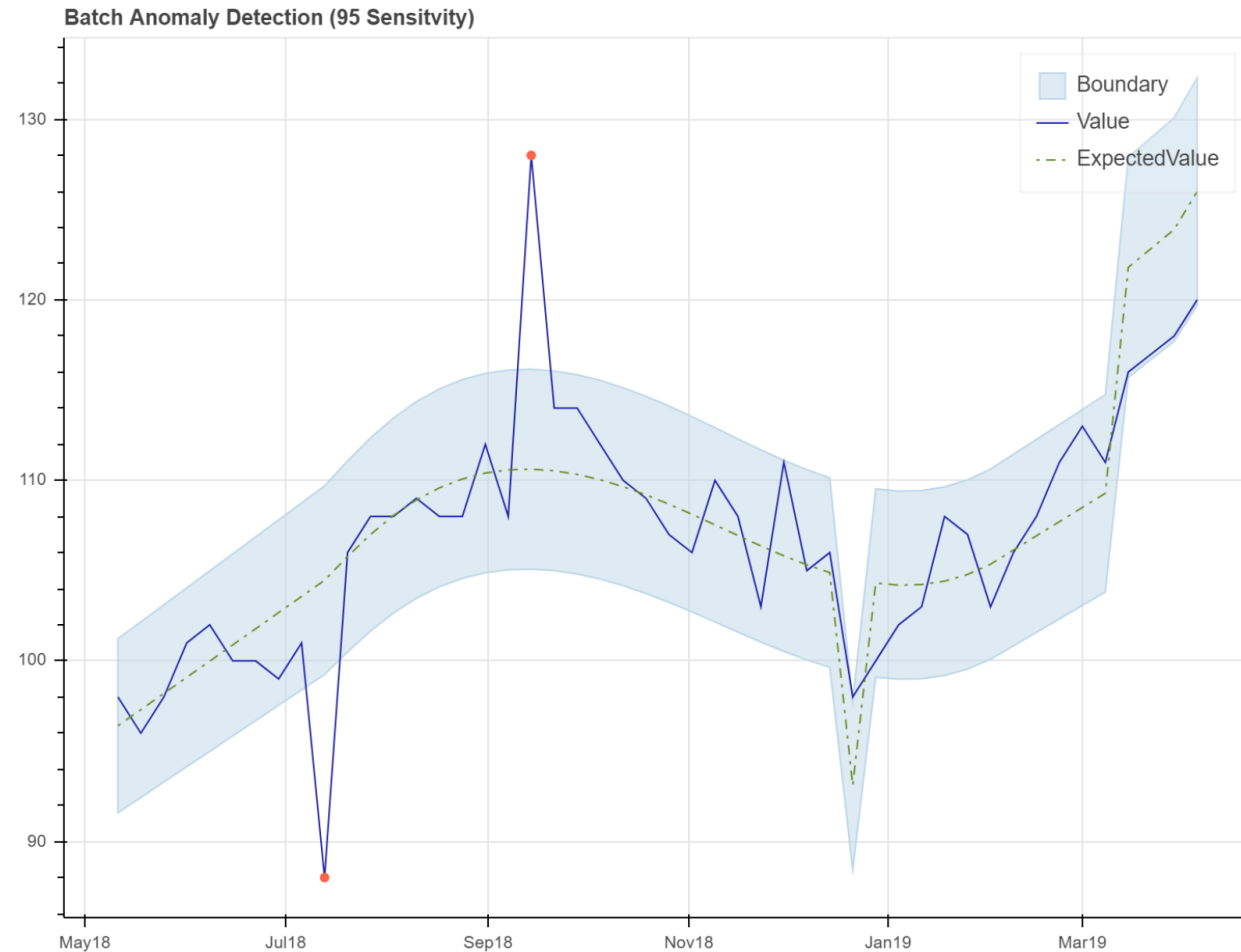




Decision

Anomaly Detector
Content Moderator
Personalizer

Anomaly Detector





Decision

Anomaly Detector
Content Moderator
Personalizer

Content Moderator

- Detection of **potential offensive** and **unwanted images**
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Decision

Anomaly Detector
Content Moderator
Personalizer

Personalizer



Bringing it all together

Imagine being able to search your environment in the same way you search the web to find things and people in real-time?





Artificial Intelligence is real

The background is a complex digital landscape. A central wireframe head is rendered in a light blue color, appearing to be composed of many small dots or vertices. The head is surrounded by various digital elements: streams of binary code (0s and 1s) in yellow and white, some of which are blurred as if moving through space. There are also vertical bars of varying heights and colors (teal, blue) that resemble data or signal levels. The overall color palette is dominated by blues, teals, and yellows, creating a futuristic and technological atmosphere.

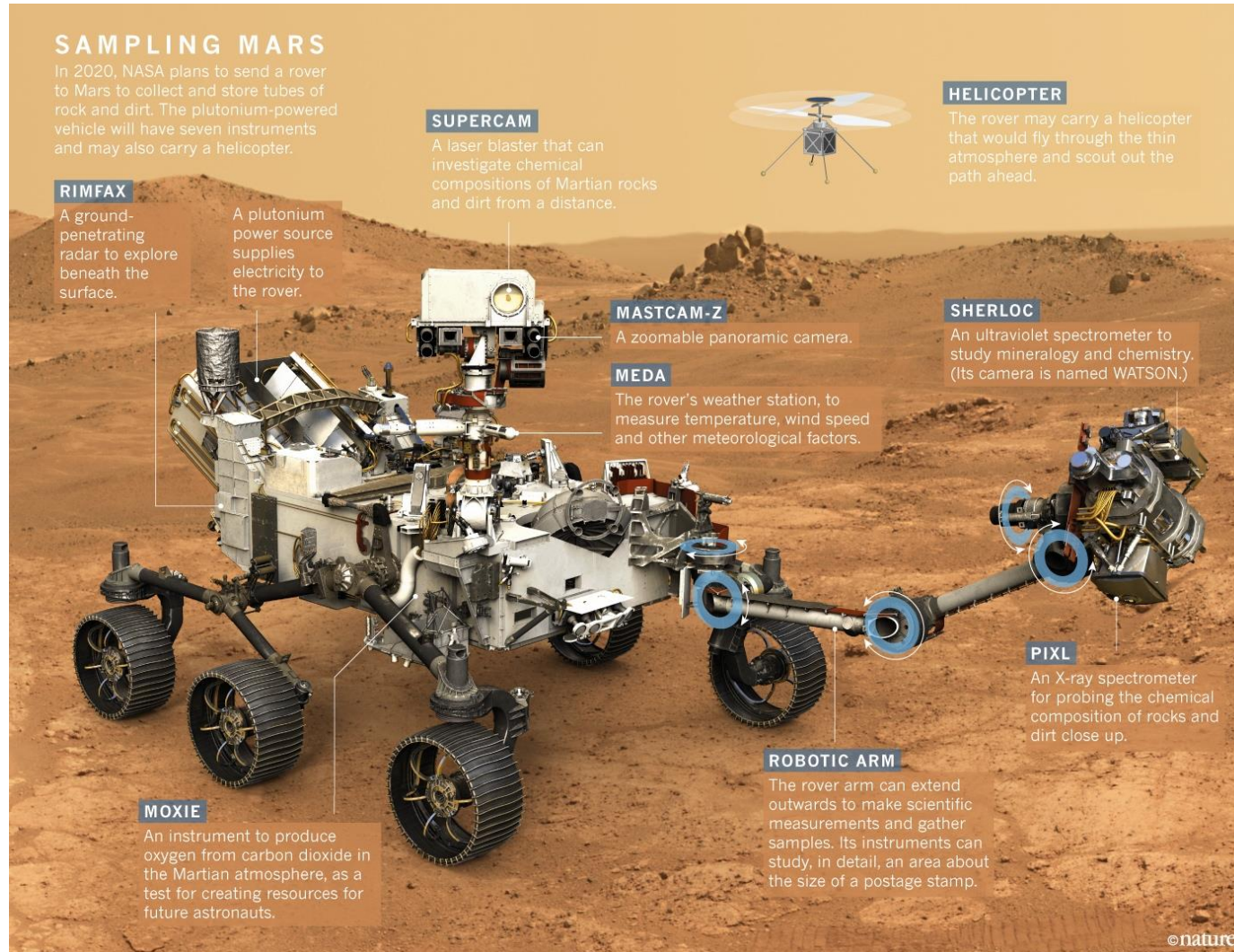
Will it assist us?

Military Applications

Aiming, defending
and moving
simultaneously



Space Exploration



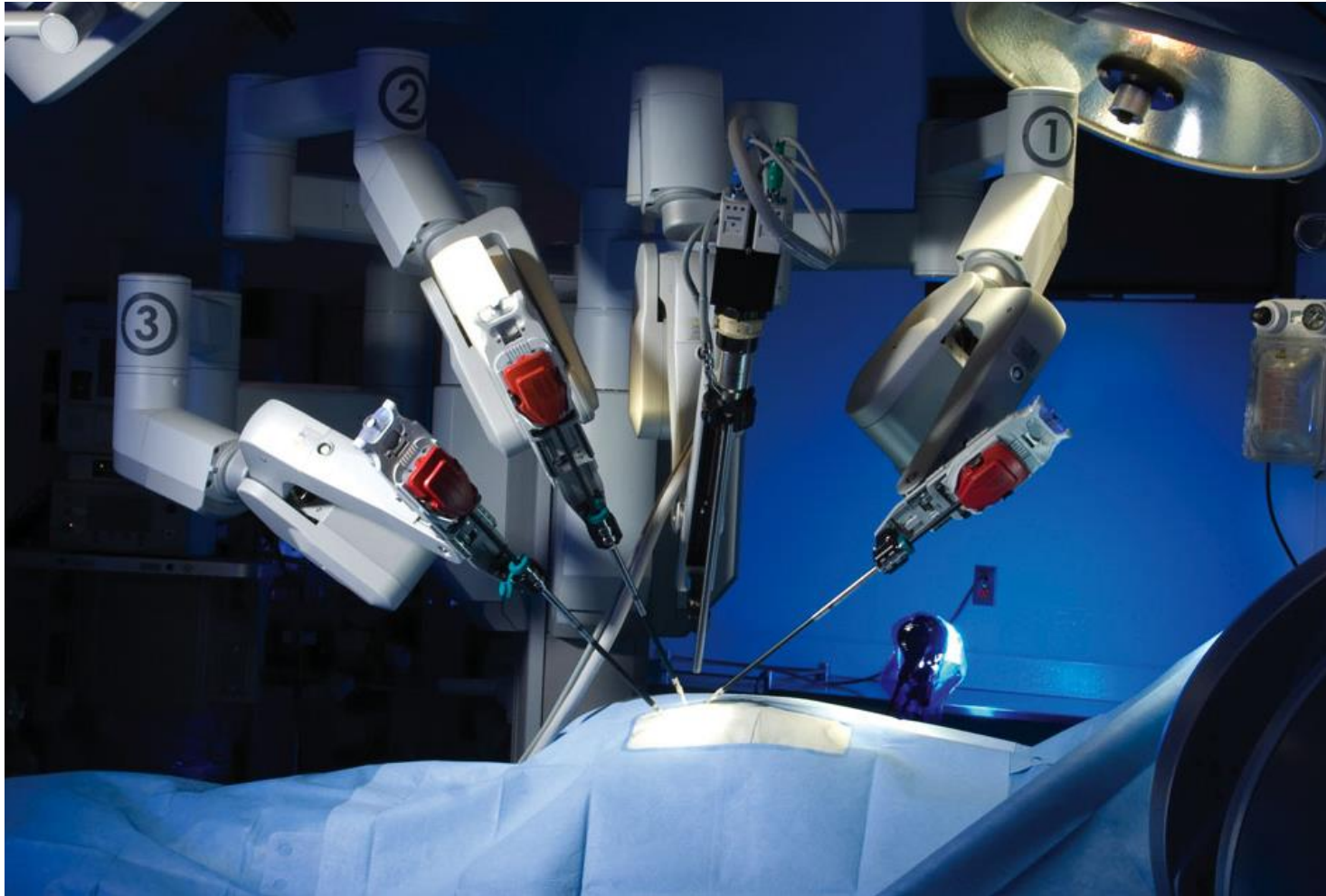
Water, Recycling,
Food, Space Radiation
and Psychological
Issues of confinement
do not concern a
robot.

Underwater Mining

It is not possible to have Mining Staff on site at certain depths.



Medical Research



AI Technology can perform delicate operations more precisely and efficiently.

The image features a central wireframe head in profile, facing right, set against a dark blue background. The head is composed of a grid of light blue dots and lines. Surrounding the head are various digital elements: streams of binary code (0s and 1s) in yellow and white, some appearing to flow or be scattered. There are also vertical bars of varying heights, resembling a bar chart, on the right side. The overall aesthetic is futuristic and technological, with a strong emphasis on data and digital communication.

... or replace us?

Myths

AI Turning evil/conscious

Robots are the main concern

AI cannot control humans

Machines cannot have goals

Superintelligence is just years away

Facts

AI turning competent with goals
misaligned with ours

AI needs no body just an internet
connection

Intelligence enables control

A heat seeking missile has a goal

It's at least decades away but it may
take longer to make it safe



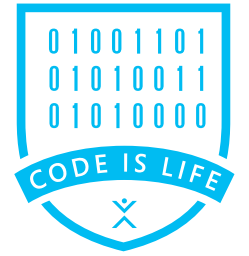
“I’ve talked to Mark about this. His understanding of the subject is limited.”

Elon Musk

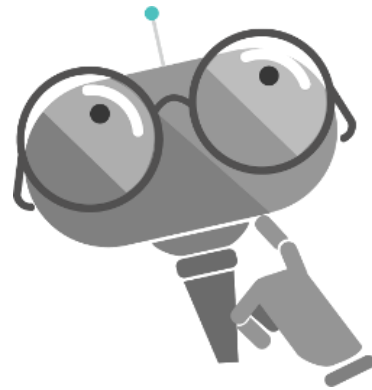
“...people who drum up doomsday scenarios... I actually think it is pretty irresponsible.”

Mark Zuckerberg





Questions?



Georgia Kalyva

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Andriana Vera

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Association for Computing Machinery



Microsoft Student Partners