

# AI-DRIVEN ARCHITECTURES

OR: HOW TO HAVE A FUTURE COMPATIBLE ARCHITECTURE

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AEROSPIKE

@WEAREDEVS  
@NATALIEPIS  
@AEROSPIKEDB

# SLIDES AND LINKS

[developer.aerospike.com/WeAreDevelopers](https://developer.aerospike.com/WeAreDevelopers)

# THE AI/ML REVOLUTION

## THE AI/ML REVOLUTION

- ▶ The AI/ML revolution will trigger the emergence of many new industries.
- ▶ The AI/ML revolution is a global phenomenon and will affect the industries we know today.

**KNOW WHERE YOUR INDUSTRY  
IS ON THE AI/ML CURVE**

## KNOW WHERE YOUR INDUSTRY IS ON THE AI/ML CURVE

- ▶ If you know where your industry is on the AI/ML curve, you can start preparing your company to be future compatible.
- ▶ The four technologies that are growing rapidly are Virtual Reality, Augmented Reality, Autonomous Vehicles and Chatbots.
- ▶ It is important to know the progress of each of these technologies in your industry so you can prepare for the future.

**MAKE YOUR BUSINESS FUTURE  
COMPATIBLE WITH AI/ML**

## MAKE YOUR BUSINESS FUTURE COMPATIBLE WITH AI/ML

- ▶ It is important to know the potential of AI/ML and develop strategies to stay in the running with innovations of technology.
- ▶ AI/ML will change how businesses operate and it's imperative to know what factor will be competitive in the future.

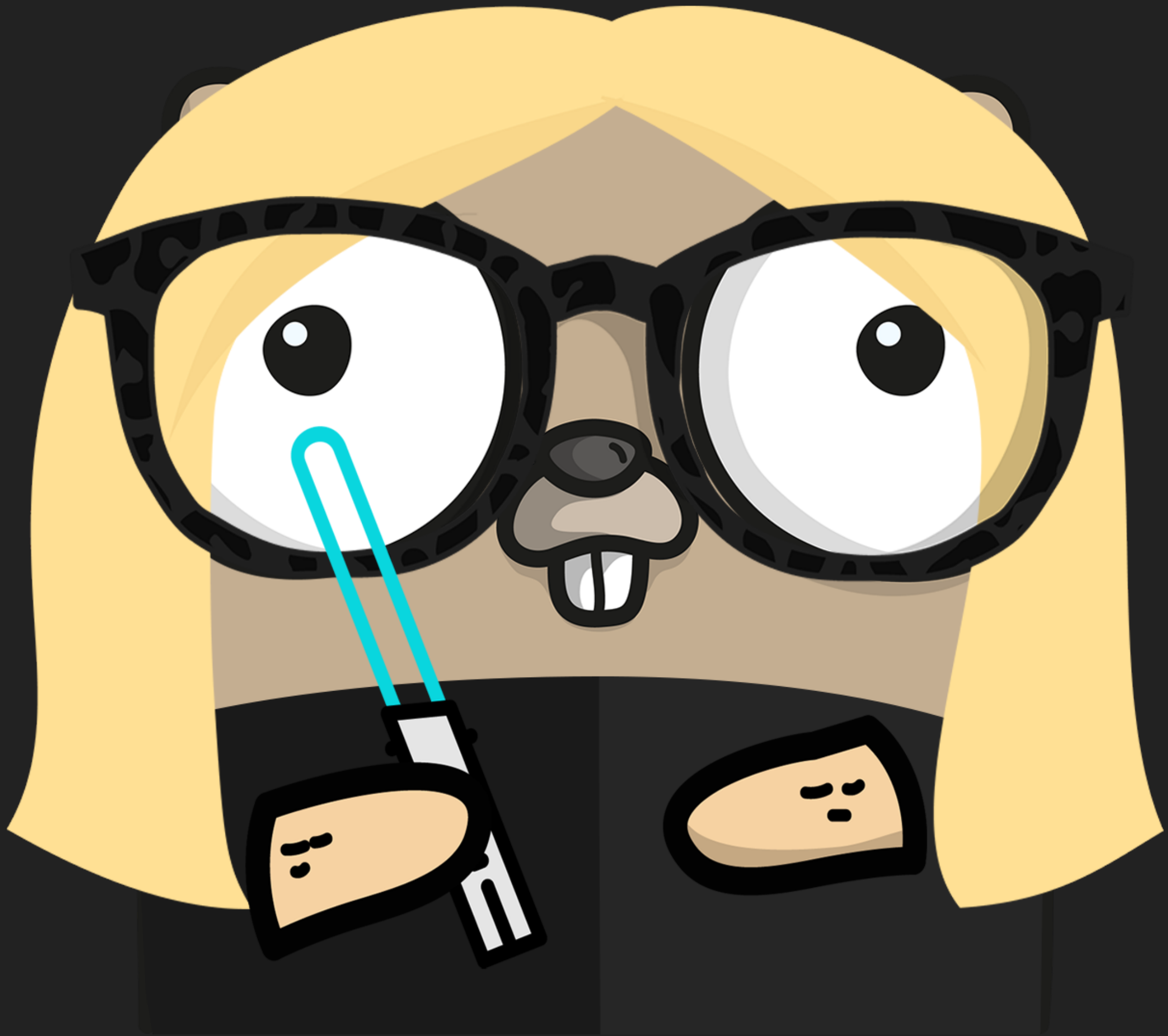


# BUSINESS AI AND THE POTENTIAL OF AI/ML

## BUSINESS AI AND THE POTENTIAL OF AI/ML

- ▶ AI/ML has the capacity to make things easier for humans and create new opportunities for players who are already established.
- ▶ AI/ML will allow you to make better decisions in the long run about your business model and the future of it.

**WHAT ELSE IS  
THERE TO SAY?**



# NATALIE PISTUNOVICH IS

AN ENTREPRENEUR, WRITER, AND PUBLIC SPEAKER. SHE IS THE FOUNDER OF THE HUMAN STARTUP, A PLATFORM THAT HELPS PEOPLE CREATE THEIR OWN STARTUPS.

NATALIE STARTED HER FIRST COMPANY AT THE AGE OF 16, WHICH SHE GREW INTO A \$10M ANNUAL REVENUE BUSINESS BY THE TIME SHE WAS 19. SHE HAS BEEN FEATURED IN THE NEW YORK TIMES, FORBES, ENTREPRENEUR, INC., AND MORE. SHE HAS SPOKEN AT NUMEROUS EVENTS LIKE TEDX, SXSW, AND THE UNITED NATIONS.

NATALIE IS A GRADUATE OF THE UNIVERSITY OF WASHINGTON, WHERE SHE STUDIED BUSINESS AND ENTREPRENEURSHIP.

CONNECT WITH NATALIE: [WEBSITE](#) | [FACEBOOK](#) | [TWITTER](#) | [INSTAGRAM](#) | [LINKEDIN](#)



# Playground i

**Write 4 paragraphs for my conference talk about "Be Future Compatible with AI/ML In Your Industry":**

## 1. The AI/ML revolution

The AI/ML revolution will trigger the emergence of many new industries. The AI/ML revolution is a global phenomenon and will affect the industries we know today.

## 2. Know where your industry is on the AI/ML curve

If you know where your industry is on the AI/ML curve, you can start preparing your company to be future compatible. The four technologies that are growing rapidly are Virtual Reality, Augmented Reality, Autonomous Vehicles and Chatbots. It is important to know the progress of each of these technologies in your industry so you can prepare for the future.

## 3. Make your business future compatible with AI/ML

It is important to know the potential of AI/ML and develop strategies to stay in the running with innovations of technology. AI/ML will change how businesses operate and it's imperative to know what factor will be competitive in the future.

## 4. Business AI and the potential of AI/ML

AI/ML has the capacity to make things easier for humans and create new opportunities for players who are already established. AI/ML will allow you to make better decisions in the long run about your business model and the future of it.

This model is part of the instruct-series beta. Prompts submitted to these models may be used to train and improve future models. See additional information.

Submit →



**WHAT DOES OPENAI  
DO?**

## WHAT DOES OPENAI DO?

- ▶ We work on many different projects, but our main focus is on learning algorithms.
- ▶ We're trying to build systems that can learn to solve any task given to them from experience, rather than being explicitly programmed.



**WHY DOES OPENAI  
EXIST?**

## WHY DOES OPANAI EXIST?

- ▶ We believe that artificial intelligence has the potential to help humanity solve some of its most pressing challenges, like climate change and disease diagnosis.
- ▶ But we also think there are many ways AI could go wrong and cause harm - even to its creators.
- ▶ That's why we're working on building safe AI systems that will benefit humanity as a whole.

**WHAT IS OPENAI DOING  
RIGHT NOW?**

## WHAT IS OPENAI DOING RIGHT NOW?

- ▶ Our main project right now is focused on reinforcement learning: teaching agents how to behave in environments by interacting with them directly rather than following pre-programmed instructions or rules (like in chess or Go).
- ▶ We're using this to build systems that can learn to play games, drive a car, and perform surgery.

# WHAT IS REINFORCEMENT LEARNING?

## WHAT IS REINFORCEMENT LEARNING?

- ▶ Reinforcement learning is a type of machine learning where the agent learns by interacting with its environment rather than being explicitly programmed.
- ▶ The agent tries different actions and gets feedback on whether they were good or bad (reinforcement), which it uses to decide what to do next.
- ▶ It's inspired by how animals seem to learn about their world: through trial and error, rather than from pre-programmed instructions.

**HOW DOES OPENAI USE  
REINFORCEMENT LEARNING?**

## HOW DOES OPENAI USE REINFORCEMENT LEARNING?

- ▶ We're using reinforcement learning in many different ways at OpenAI: training agents directly on raw pixels in Atari games; training agents on simulated robot arms.
- ▶ And more.



## **Content for slides for a presentation about Opening a Window to OpenAI**

### **1. What is OpenAI?**

OpenAI is a non-profit artificial intelligence research company. We are working on solving the problem of general artificial intelligence, and we're doing so by building software that can learn to solve any task given to it.

### **2. What does OpenAI do?**

We work on many different projects, but our main focus is on learning algorithms. We're trying to build systems that can learn to solve any task given to them from experience, rather than being explicitly programmed.

### **3. Why does OpenAI exist?**

We believe that artificial intelligence has the potential to help humanity solve some of its most pressing challenges, like climate change and disease diagnosis. But we also think there are many ways AI could go wrong and cause harm - even to its creators. That's why we're working on building safe AI systems that will benefit humanity as a whole.

### **4. What is OpenAI doing right now?**

Our main project right now is focused on reinforcement learning: teaching agents how to behave in environments by interacting with them directly rather than following pre-programmed instructions or rules (like in chess or Go). We're using this to build systems that can learn to play games, drive a car, and perform surgery.

### **5. What is reinforcement learning?**

Reinforcement learning is a type of machine learning where the agent learns by interacting with its environment rather than being explicitly programmed. The agent tries different actions and gets feedback on whether they were good or bad (reinforcement), which it uses to decide what to do next. It's inspired by how animals seem to learn about their world: through trial and error, rather than from pre-programmed instructions.

6. How does OpenAI use reinforcement learning?  
We're using reinforcement learning in many different ways at OpenAI: training agents directly on raw pixels in Atari games; training agents on simulated robot arms.

**SO, WHAT ELSE IS  
THERE TO SAY?**

**WHAT IS AI?**

**ARTIFICIAL INTELLIGENCE IS INTELLIGENCE  
DEMONSTRATED BY MACHINES, IN CONTRAST TO  
THE NATURAL INTELLIGENCE DISPLAYED BY HUMANS.**

**ARTIFICIAL INTELLIGENCE IS  
A BRANCH OF COMPUTER SCIENCE  
THAT AIMS TO CREATE INTELLIGENT MACHINES  
THAT WORK AND REACT LIKE HUMANS.**

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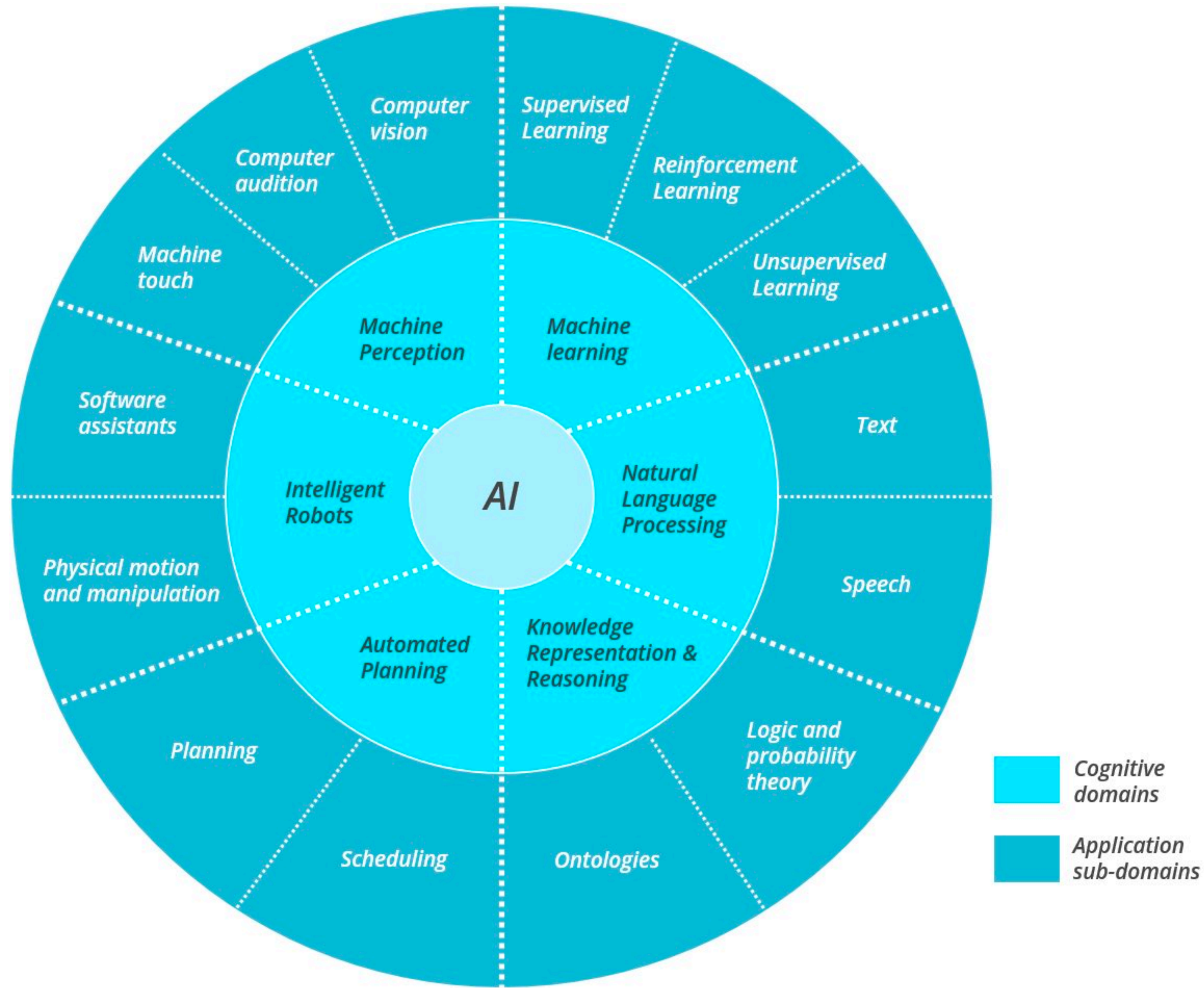
**ARTIFICIAL INTELLIGENCE IS INTELLIGENCE DEMONSTRATED BY MACHINES, IN CONTRAST TO THE NATURAL INTELLIGENCE DISPLAYED BY HUMANS.**

**- GPT-3**

**ARTIFICIAL INTELLIGENCE IS A BRANCH OF COMPUTER SCIENCE THAT AIMS TO CREATE INTELLIGENT MACHINES THAT WORK AND REACT LIKE HUMANS.**

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**- Wikipedia**





**WHAT IS OPENAI?**

## ABOUT OPENAI

- ▶ An AI research and deployment company founded in 2015
- ▶ Mission:
  - ▶ Ensure that Artificial General Intelligence benefits all of humanity

**OPENAI'S GPT-3**

## GPT-3

- ▶ Announced 06/2020
- ▶ Trained on 175B parameters
- ▶ Great zero/few -shot learning performance:
  - ▶ Needs none/few examples to understand a tasks and perform equivalent or even better than the state-of-the-art supervised models and humans
  - ▶ E.g. writing content or code
- ▶ The models' training data cuts off in 10/2019, updated regularly since

## API USAGE

- ▶ A general-purpose “text in, text out” interface for any language task.
  - ▶ Text in: text-based input or “instructions”
  - ▶ Text out: a text completion, attempting to match the context or pattern
  - ▶ To “program” it, craft a description or writing just a few examples of what you’d like it to do, as you’d write to *a middler schooler*

## ADA

- ▶ The fastest model
- ▶ Capable of simple tasks
- ▶ **Good at: parsing text, simple classification, address correction, keywords**

## BABBAGE

- ▶ Can perform straightforward tasks
- ▶ Eg Semantic Search ranking how well documents match up with search queries
- ▶ **Good at: moderate classification, semantic search classification**

## CURIE

- ▶ Extremely powerful and very fast
- ▶ Great for answering questions and performing Q&A and chatbot
- ▶ **Good at: language translation, complex classification, sentiment summarization**



## CURIE-INSTRUCT

- ▶ Extremely powerful and very fast
- ▶ More natural prompt, great at following instructions
- ▶ **Good at: language translation, complex classification, text sentiment, summarization**

## DAVINCI

- ▶ The most capable engine, can perform any task the other models can perform, often with less context
- ▶ Most expensive and slowest (still blink of an eye)
- ▶ Great for understanding the intent of text, solving logic problems and explaining the motives of characters
- ▶ **Good at: complex intent, cause and effect, summarization for audience, creative generation**

## DAVINCI-INSTRUCT

- ▶ Same as Davinci, but with a more natural prompt
- ▶ **Good at: complex intent, cause and effect, summarization for audience, creative generation**

# DALL·E

TEXT PROMPT

an illustration of a baby daikon radish in a tutu walking a dog

AI-GENERATED IMAGES



[Edit prompt or view more images ↓](#)

TEXT PROMPT

an armchair in the shape of an avocado [...]

AI-GENERATED IMAGES



[Edit prompt or view more images ↓](#)

TEXT PROMPT

a store front that has the word 'openai' written on it [...]

AI-GENERATED IMAGES



[Edit prompt or view more images ↓](#)

# GPT-3 EXAMPLES

Jupiter is the fifth planet from the Sun and the largest in the Solar System. It is a gas giant with a mass one-thousandth that of the Sun, but two-and-a-half times that of all the other planets in the Solar System combined. Jupiter is one of the brightest objects visible to the naked eye in the night sky, and has been known to ancient civilizations since before recorded history. It is named after the Roman god Jupiter.[19] When viewed from Earth, Jupiter can be bright enough for its reflected light to cast visible shadows,[20] and is on average the third-brightest natural object in the night sky after the Moon and Venus.

Jupiter is primarily composed of hydrogen with a quarter of its mass being helium, though helium comprises only about a tenth of the number of molecules. It may also have a rocky core of heavier elements,[21] but like the other giant planets, Jupiter lacks a well-defined solid surface. Because of its rapid rotation, the planet's shape is that of an oblate spheroid (it has a slight but noticeable bulge around the equator).

**tl;dr:** Jupiter is the largest planet in the solar system. It is a gas giant, and is composed mostly of hydrogen and helium. It has a very fast rotation, and is very bright in the night sky.

**SUMMARIZATION**

Social media post: "The new episode of The Mandalorian was great"

Sentiment (positive, neutral, negative): positive|

**CLASSIFICATION**

## **Blog topics about being a woman in tech**

1. How do you deal with imposter syndrome?
2. What are the biggest challenges for women in tech?
3. How can we make it easier for women to get into tech?
4. How can we encourage more women to start companies?

**IDEA GENERATION**



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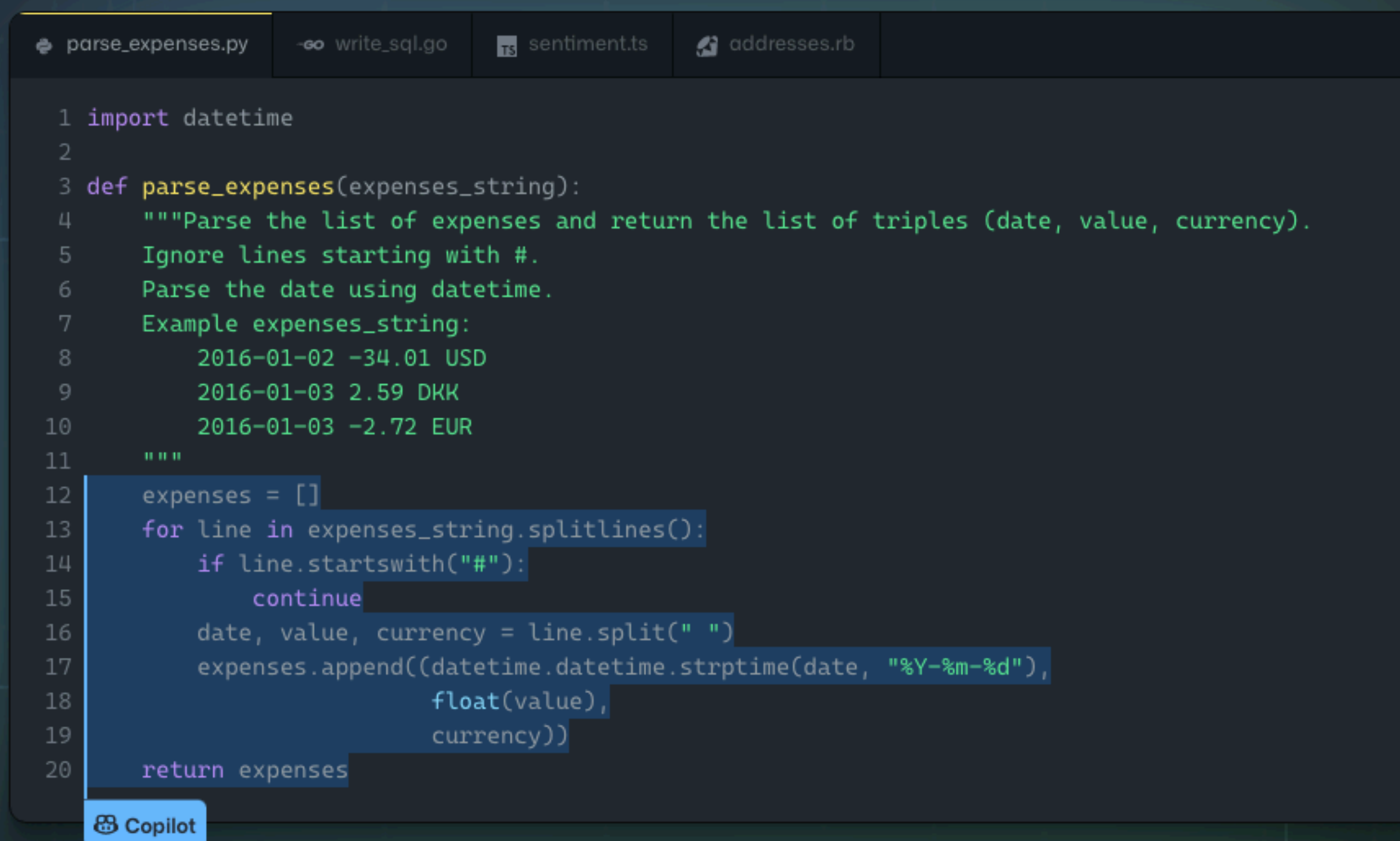
**CONTENT CREATION**

Technical Preview

# Your AI pair programmer

With GitHub Copilot, get suggestions for whole lines or entire functions right inside your editor.

Sign up &gt;



```
parse_expenses.py write_sql.go sentiment.ts addresses.rb
1 import datetime
2
3 def parse_expenses(expenses_string):
4     """Parse the list of expenses and return the list of triples (date, value, currency).
5     Ignore lines starting with #.
6     Parse the date using datetime.
7     Example expenses_string:
8         2016-01-02 -34.01 USD
9         2016-01-03 2.59 DKK
10        2016-01-03 -2.72 EUR
11    """
12    expenses = []
13    for line in expenses_string.splitlines():
14        if line.startswith("#"):
15            continue
16        date, value, currency = line.split(" ")
17        expenses.append((datetime.datetime.strptime(date, "%Y-%m-%d"),
18                        float(value),
19                        currency))
20    return expenses
```

Copilot

Replay  
Powered by

OpenAI

Tests without the toil. Tests are the backbone of any robust software engineering project. Import a unit test package, and let GitHub Copilot suggest tests that match your implementation code.

```
strip_suffix.py gcd.rb JS count_button.js

1 def strip_suffix(filename):
2     """
3     Removes the suffix from a filename
4     """
5     return filename[:filename.rfind('.')]
6
7 import unittest
8
9 def test_strip_suffix():
10     """
11     Tests for the strip_suffix function
12     """
13     assert strip_suffix('notes.txt') == 'notes'
14     assert strip_suffix('notes.txt.gz') == 'notes.txt'
```

 Copilot

 Replay

comment\_marker.ts

course.rb

JS time.js

```
1 interface CommentMarker {
2   start: string;
3   end: string;
4 }
5
6 const markers: { [language:string]: CommentMarker } = {
7   javascript: { start: '//', end: '' },
8   python:     { start: '#', end: '' },
9   css:       { start: '/*', end: '*/' },
10  html:      { start: '<!--', end: '-->' },
11  bash:      { start: '#', end: '' },
12  postscript: { start: '%', end: '' },
13  cobol:     { start: '*', end: '' },
14  asm:       { start: ';', end: '' },
15  haskell:   { start: '--', end: '' }
16 }
```

Copilot

Replay

**Autofill for repetitive code.**  
GitHub Copilot works great for quickly producing boilerplate and repetitive code patterns. Feed it a few examples and let it generate the rest!

Convert comments to code. Write a comment describing the logic you want, and let GitHub Copilot assemble the code for you.

```
collaborators.ts  get_repositories.py  JS non_alt_images.js

1 /**
2  * json schema:
3  * [
4  *   { name: "John Doe",
5  *     collaborators: ["Jane Doe", "Herbert Frapp", "Elsie McEwan"]
6  * },
7  *   { name: "Jane Doe",
8  *     collaborators: ["John Doe", "Karen Smith"]
9  * },
10 *   { name: "Skittles the Cat",
11 *     collaborators: []
12 * }
13 * ]
14 */
15 function collaborators_map(json: any): Map<string, Set<string>> {
16   const map = new Map<string, Set<string>>();
17   for (const item of json) {
18     const name = item.name;
19     const collaborators = item.collaborators;
20     const set = new Set<string>(collaborators);
21     map.set(name, set);
22   }
23   return map;
24 }
```

 Copilot

 Replay

**Show me alternatives.** Want to evaluate a few different approaches? GitHub Copilot can show you a list of solutions. Use the code as provided, or edit it to meet your needs.



The image shows a screenshot of the Visual Studio Code editor. At the top, the title bar reads "Visual Studio Code". On the left side, there is a sidebar with icons for Explorer, Search, Source Control, Run and Debug, Extensions, and Settings. The main editor area displays a Python function:

```
1 def max_sum_slice(xs):  
2     max_ending = max_so_far = 0  
3     for x in xs:  
4         max_ending = max(0, max_ending + x)  
5         max_so_far = max(max_so_far, max_ending)  
6     return max_so_far
```

At the top of the editor, a light blue bar contains three suggestions: "Next" with a right arrow key icon, "Previous" with a left arrow key icon, and "Accept" with a Tab key icon. The "Next" and "Previous" suggestions are highlighted with a light blue background. The status bar at the bottom left shows "main" and the bottom right shows "Ln 6 Col, 21".

**GOOGLE AI /  
DEEPMIND**

## ABOUT GOOGLEAI

- ▶ A division of Google dedicated to artificial intelligence announced in 2017
- ▶ Mission:
  - ▶ Conduct research that advances the state-of-the-art in the field, applying AI to products and to new domains
  - ▶ Develop tools to ensure that everyone can access AI.
- ▶ Trained on **1,000,000,000,000** parameters



## ABOUT GOOGLEAI/DEEPMIND

- ▶ Started by IBM in 2010
- ▶ Joined forces with Google in 2014 to accelerate the work, while continuing to set their own research agenda
- ▶ Achievements
  - ▶ Manage Google's data centres energy consumption
  - ▶ AlphaFold, a system which accurately predicts the shape of proteins.

**AI DRIVEN TOOLS**

Google Health

Google DeepMind

# MED TECH

IBM Watson Health



SOURCE:  
ANALYTICS.DKV.GLOBAL



# FARMTECH LANDSCAPE 2020



| Digital Agronomy & Production                 |  |                                      |  | Planning & Farm Management             |  |  |  | Market Access and Financing        |  |                     |  |                   |  |
|---|--|--------------------------------------|--|--|--|--|--|------------------------------------|--|---------------------|--|-------------------|--|
| Field Monitoring Sensors & Solutions          |  | Soil Sensing / Analysis              |  | Pest Sensing / Monitoring              |  | Bee Keeping / Pollination                  |  | Crop / Farm Management Software    |  |                     |  | Farmland Analysis |  |
|   |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |
| Precision Irrigation                          |  | Precision Applications               |  | OEM / Input Digital Agronomy Platforms |  | FMIS (Farm Management Information Systems) |  |                                    |  | Yield Forecasting   |  |                   |  |
|   |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |
| IoT Monitoring Platforms                      |  | Imaging Analytics                    |  | Automation/ Robotics Row Crops         |  | Farm ERP                                   |  | Retail ERP                         |  | Finance & Insurance |  |                   |  |
|   |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |
| Imaging Systems & Services                    |  | Automation/ Robotics Specialty Crops |  | Sustainability Tools                   |  | Water Management                           |  | Crop Marketing / Trading Platforms |  |                     |  |                   |  |
|   |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |
| Digital Marketplace (Input)                   |  | Integrated Solutions                 |  |  |  | Digital Marketplace (Offtake)              |  |                                    |  |                     |  |                   |  |
|   |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |
| Farm Data Aggregators, Integrators, Analytics |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |
|   |  |                                      |  |  |  |  |  |                                    |  |                     |  |                   |  |

FOOD  
TECH

# AI ECOSYS TEM

## DATA & AI LANDSCAPE 2020

### INFRASTRUCTURE

**STORAGE**  
Amazon S3, Google Cloud Storage, Microsoft Azure Storage, IBM Cloud Object Storage, VAST, Cloudinary, AWS ElastiCache, Amazon ElastiCache, Oracle Cloud Infrastructure, Oracle Autonomous Database, AWS ElastiCache, Amazon ElastiCache, Oracle Cloud Infrastructure, Oracle Autonomous Database

**HADOOP**  
Cloudera, Amazon EMR, Microsoft Azure Databricks, IBM InfoSphere, QM1, CAELINA

**DATA LAKES**  
Amazon Lake Formation, AWS Lake Analytics, IBM Power Systems, Informatica, Dremio, CAELINA

**DATA WAREHOUSES**  
Amazon Redshift, Microsoft Azure Synapse Analytics, IBM Power Systems, Informatica, Dremio, CAELINA

**STREAMING / IN-MEMORY**  
Amazon Kinesis, Microsoft Azure Stream Analytics, IBM Power Systems, Informatica, Dremio, CAELINA

### ANALYTICS & MACHINE INTELLIGENCE

**BI PLATFORMS**  
Tableau, Power BI, Qlik, Alteryx, MicroStrategy, Looker, ThoughtSpot, Anaplan, Qlik, Alteryx

**VISUALIZATION**  
Tableau, Power BI, Qlik, Alteryx, MicroStrategy, Looker, ThoughtSpot, Anaplan, Qlik, Alteryx

**DATA ANALYST PLATFORMS**  
Microsoft, Alteryx, Tableau, Power BI, Qlik, Alteryx, MicroStrategy, Looker, ThoughtSpot, Anaplan, Qlik, Alteryx

### APPLICATIONS - ENTERPRISE

**SALES**  
Salesforce, HubSpot, Pardot, Marketo, Braze, Braze, Braze

**MARKETING - B2B**  
Salesforce, HubSpot, Pardot, Marketo, Braze, Braze, Braze

**MARKETING - B2C**  
Salesforce, HubSpot, Pardot, Marketo, Braze, Braze, Braze

**CUSTOMER EXPERIENCE / SERVICE**  
Salesforce, HubSpot, Pardot, Marketo, Braze, Braze, Braze

**HUMAN CAPITAL**  
Salesforce, HubSpot, Pardot, Marketo, Braze, Braze, Braze

**NoSQL DATABASES**  
MongoDB, Amazon DynamoDB, Amazon Keyspaces, Amazon Keyspaces, Amazon Keyspaces

**NewSQL DATABASES**  
CockroachDB, SAP, SAP, SAP, SAP

**GRAPH DBS**  
Neo4j, Amazon Neptune, Amazon Neptune, Amazon Neptune

**MPP DBS**  
Teradata, Vertica, Vertica, Vertica

**SERVER-LESS**  
AWS Lambda, AWS Lambda, AWS Lambda

**CLUSTER SVCS**  
Amazon EMR, Amazon EMR, Amazon EMR

**DATA SCIENCE NOTEBOOKS**  
Databricks, Databricks, Databricks

**DATA SCIENCE PLATFORMS**  
Databricks, Databricks, Databricks

**MACHINE LEARNING**  
Databricks, Databricks, Databricks

**LEGAL**  
Legaltech, Legaltech, Legaltech

**REGTECH & COMPLIANCE**  
Legaltech, Legaltech, Legaltech

**FINANCE**  
Legaltech, Legaltech, Legaltech

**AUTOMATION & RPA**  
Legaltech, Legaltech, Legaltech

**SECURITY**  
Legaltech, Legaltech, Legaltech

**ETL / DATA TRANSFORMATION**  
Talend, Talend, Talend

**DATA INTEGRATION**  
Talend, Talend, Talend

**DATA GOVERNANCE**  
Talend, Talend, Talend

**DATA QUALITY**  
Talend, Talend, Talend

**COMPUTER VISION**  
Microsoft, Microsoft, Microsoft

**HORIZONTAL AI**  
Microsoft, Microsoft, Microsoft

**SPEECH & NLP**  
Microsoft, Microsoft, Microsoft

**ADVERTISING**  
Google, Google, Google

**EDUCATION**  
Google, Google, Google

**REAL ESTATE**  
Google, Google, Google

**GOVT & INTELLIGENCE**  
Google, Google, Google

**COMMERCE**  
Google, Google, Google

**FINANCE - LENDING**  
Google, Google, Google

**INSURANCE**  
Google, Google, Google

**MGMT / MONITORING**  
Splunk, Splunk, Splunk

**DATA GENERATION & LABELLING**  
Splunk, Splunk, Splunk

**AI OPS**  
Splunk, Splunk, Splunk

**GPU DBS & CLOUD**  
Splunk, Splunk, Splunk

**AI HARDWARE**  
Splunk, Splunk, Splunk

**SEARCH**  
Elasticsearch, Elasticsearch, Elasticsearch

**LOG ANALYTICS**  
Elasticsearch, Elasticsearch, Elasticsearch

**SOCIAL ANALYTICS**  
Elasticsearch, Elasticsearch, Elasticsearch

**WEB / MOBILE / COMMERCE ANALYTICS**  
Elasticsearch, Elasticsearch, Elasticsearch

**HEALTHCARE**  
Flatiron, Flatiron, Flatiron

**LIFE SCIENCES**  
Flatiron, Flatiron, Flatiron

**TRANSPORTATION**  
Flatiron, Flatiron, Flatiron

**AGRICULTURE**  
Flatiron, Flatiron, Flatiron

**INDUSTRIAL**  
Flatiron, Flatiron, Flatiron

**OTHER**  
Flatiron, Flatiron, Flatiron

### OPEN SOURCE

**FRAMEWORKS**  
TensorFlow, PyTorch, TensorFlow, PyTorch

**QUERY / DATA FLOW**  
Apache Airflow, Apache Airflow, Apache Airflow

**DATA ACCESS & DATABASES**  
Apache Airflow, Apache Airflow, Apache Airflow

**ORCHESTRATION & PIPELINES**  
Apache Airflow, Apache Airflow, Apache Airflow

**STREAMING & MESSAGING**  
Apache Airflow, Apache Airflow, Apache Airflow

**STAT TOOLS & LANGUAGES**  
Apache Airflow, Apache Airflow, Apache Airflow

**AI OPS & INFRA**  
Apache Airflow, Apache Airflow, Apache Airflow

**AI / MACHINE LEARNING / DEEP LEARNING**  
Apache Airflow, Apache Airflow, Apache Airflow

**SEARCH**  
Elasticsearch, Elasticsearch, Elasticsearch

**LOGGING & MONITORING**  
Elasticsearch, Elasticsearch, Elasticsearch

**VISUALIZATION**  
Tableau, Tableau, Tableau

**COLLABORATION**  
Tableau, Tableau, Tableau

**SECURITY**  
Tableau, Tableau, Tableau

### DATA SOURCES & APIs

**DATA MARKETPLACES & DISCOVERY**  
AWS Data Exchange, AWS Data Exchange, AWS Data Exchange

**FINANCIAL & ECONOMIC DATA**  
Bloomberg, Bloomberg, Bloomberg

**AIR / SPACE / SEA**  
Bloomberg, Bloomberg, Bloomberg

**PEOPLE / ENTITIES**  
ZoomInfo, ZoomInfo, ZoomInfo

**LOCATION INTELLIGENCE**  
Foursquare, Foursquare, Foursquare

**OTHER**  
ZoomInfo, ZoomInfo, ZoomInfo

### DATA RESOURCES

**DATA SERVICES**  
QuantumBlack, QuantumBlack, QuantumBlack

**INCUBATORS & SCHOOLS**  
General Assembly, General Assembly, General Assembly

**RESEARCH**  
OpenAI, OpenAI, OpenAI



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SOURCE:

<https://www.forbes.com/sites/alanohnsman/2021/04/26/ai-50-americas-most-promising-artificial-intelligence-companies>



**BE FUTURE COMPATIBLE  
WITH AI/ML**

**FUTURE COMPATIBLE**

**VS.**

**FORWARD COMPATIBLE**

## Playground

**Define "future compatible".**

Future compatible means that the code or computer system will be able to be used by new technologies.

**Define "a future compatible company".**

A future compatible company is a company that is willing to accept change and operate in a manner compatible with the future.

The company knows that change is necessary to survive.

It can be seen as a proactive company that will work ahead of time to prepare for any changes, so that it can survive.

**Define "future compatible tech".**

Future compatible tech is a class of technology which is compatible with future tech.

**ARE YOU READY  
FOR IT?**

## DEFINE “READY”

- ▶ It's like saying “I finished coding”.
  - ▶ You never do, code gets improved, repurposed and updated all the time
  - ▶ Tech, not just code alone, is changing all the time
  - ▶ Your product should catch up periodically
  - ▶ You should be open minded and embrace the change

**PREPARE FOR THE UNKNOWNNS**

**PREPARE FOR THE UNKNOWN  
AND THE UNKNOWN UNKNOWN**

# PREPARE FOR THE UNKNOWNNS AND THE UNKNOWN UNKNOWNNS

- ▶ Stay up to date
- ▶ Be open minded



**BUT WHAT CAN  
YOU COUNT ON?**

## FEATURES OF FUTURE COMPATIBLE UX/UI

- ▶ Cross cultural and in many languages
  - ▶ Live translations
- ▶ Localized interface
  - ▶ Clean and mostly empty? Busy and animated? Depends where you are

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## FEATURES OF FUTURE COMPATIBLE COMMUNITY AND SUPPORT

- ▶ Inclusive community
  - ▶ Live feedback as the user is writing?
- ▶ Personalisation
  - ▶ For a sense of belonging
- ▶ No nightly builds
  - ▶ When you go global - there's no night time

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## FEATURES OF FUTURE COMPATIBLE PRODUCT

- ▶ Lots of data
  - ▶ Personalised view
  - ▶ Relevant recommendations
- ▶ Real time
- ▶ Always reachable

NATALIE

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## FEATURES OF FUTURE COMPATIBLE TECH

It's less about the code, and more about the architecture.

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It's less about the code, and more about the architecture.

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- ▶ Served fast / real time
- ▶ Distributed
- ▶ Cross cloud providers, and cross data centres too
- ▶ Almost no down time



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NATALIE

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# FEATURES OF FUTURE COMPATIBLE TECH STACK

NATALIE

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## FEATURES OF FUTURE COMPATIBLE TECH STACK



# PROMPT DESIGNER

# FEATURES OF FUTURE COMPATIBLE TECH STACK



# FEATURES OF FUTURE COMPATIBLE TECH STACK



AEROSPIKE

# FEATURES OF FUTURE COMPATIBLE TECH STACK



AEROSPIKE

# FEATURES OF FUTURE COMPATIBLE TECH STACK



AEROSPIKE

## RECAP

- ▶ AI is already changing industry after industry
- ▶ AI needs a strong infrastructure
  - ▶ Handle a lot of data
  - ▶ Fast response time
  - ▶ No down time
  - ▶ Scale seamlessly and run everywhere



# SLIDES AND LINKS

[developer.aerospike.com/WeAreDevelopers](https://developer.aerospike.com/WeAreDevelopers)

# AI-DRIVEN ARCHITECTURES

OR: HOW TO HAVE A FUTURE COMPATIBLE ARCHITECTURE

# THANK YOU!

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