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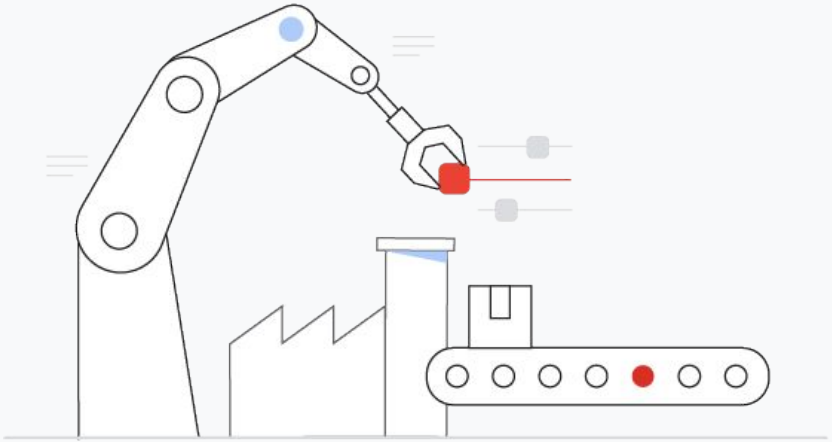
Google Cloud

Hey Google,
What's up in AI?



swiss mechatronics

mbiber@google.com

July 2024

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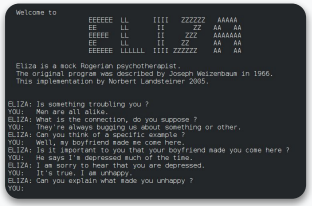
Timeline of AI Advances

1950-1990 — 1st Wave **Expert Systems**

1950 Turing Test
1966 ELIZA
1980 XCON

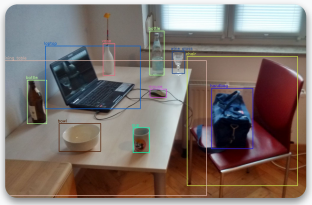


1990-2010 — 2nd Wave **Machine Learning**

1992 SVM
1997 LSTM
---- CNN
---- Clustering

2010-2020 — 3rd Wave **Deep Learning**

2012 AlexNet
2018 BERT
2019 GPT
2019 VGG
2020 ResNet, ViT



2020-today — 4th Wave **Generative AI**

2020 LaMDA
2021 GPT3, PaLM
2022 ChatGPT
2023 Gemini

Gemini

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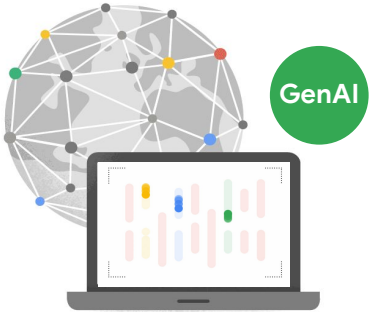
Predictive & Generative AI

Predictive AI

- Train expert ML models
- Extract and infer/forecast data
- Decision-making agents

Generative AI



- Apply and tune foundation models
- Generate and describe data
- Problem-solving agents

Gen AI holds immense potential for productivity gains in the manufacturing industry

$170-290B

value potential in Advanced Manufacturing

Leading to

7%-27%

impact of Gen AI as a proportion of the manufacturing industries' EBIT

Productivity Gains

Customer Service	**+30-45%** of current servicing costs
Marketing	**+5-15%** of total marketing spend
Software engineering	**+20-45%** of current annual spending
R&D	**+10-15%** of overall R&D costs

Source: "Economic potential of GenAI" McKinsey, 2023; CSIMarket - Auto & Truck Manufacturers Industry Profitability

What
is possible today?

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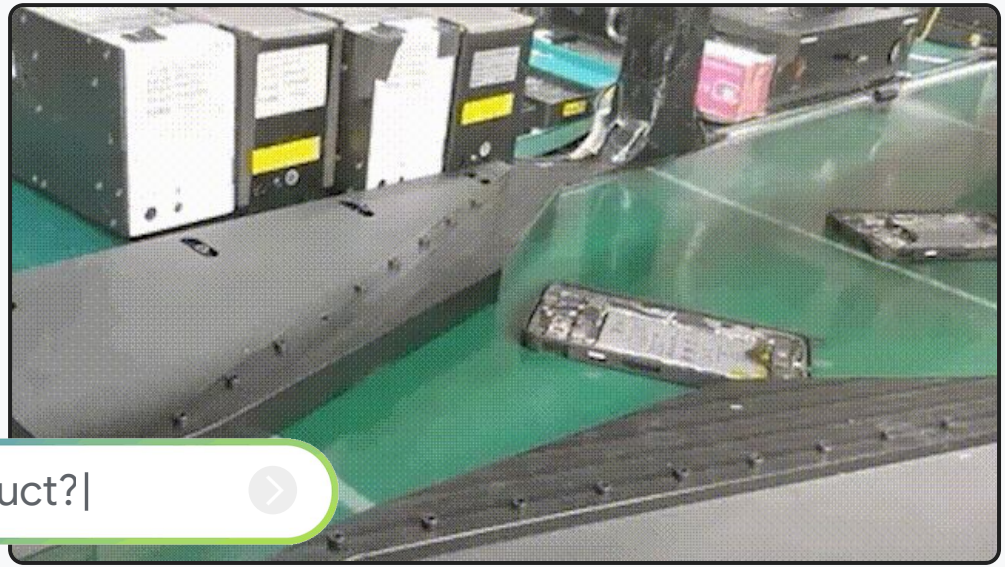
Google AI helps identifying defects



What is the quality of my product?|

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Reconstruct indoor spaces from photos

Show my restaurant in 3D

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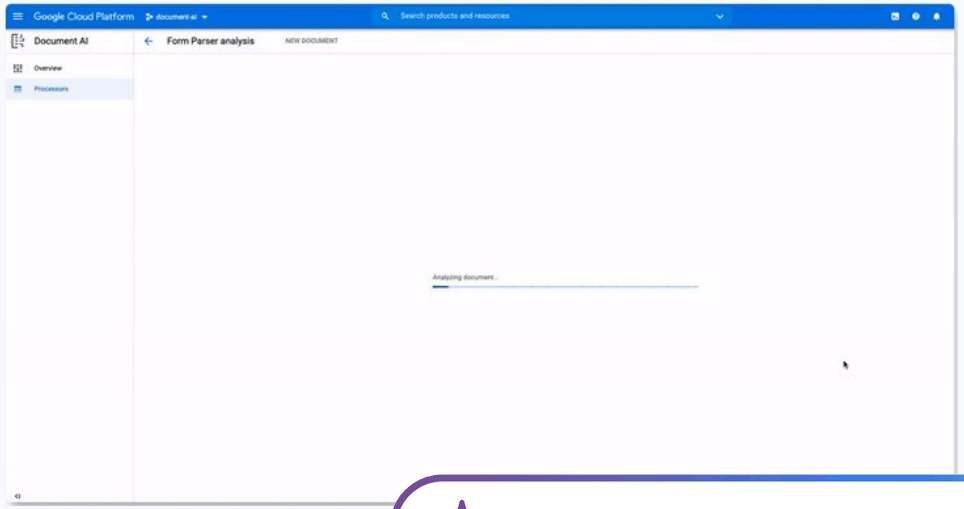
Google AI saves 20% of energy in spray cabins



Document AI turns your documents into searchable data

How to find the needle in the haystack?

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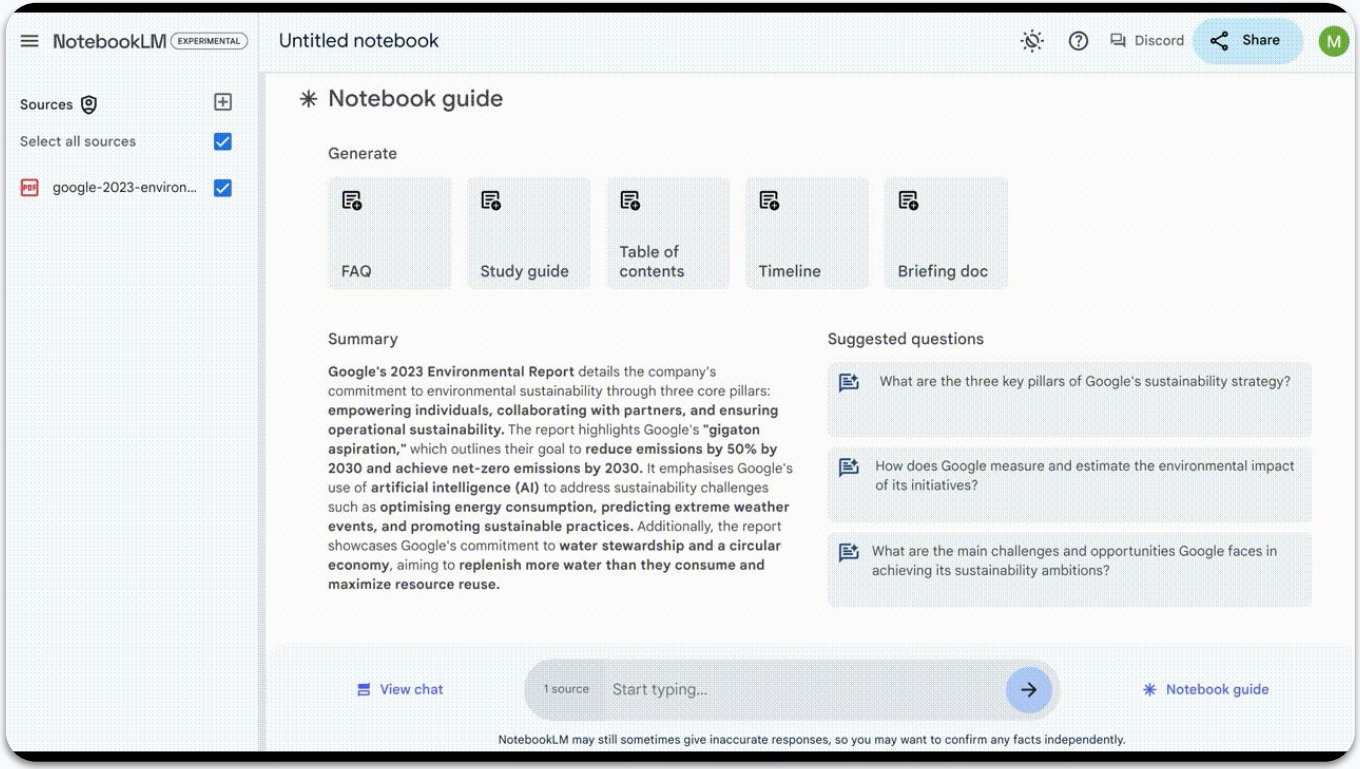
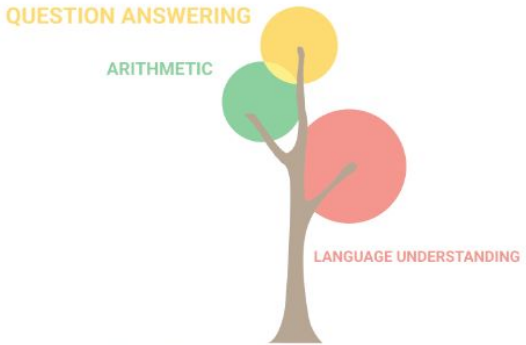
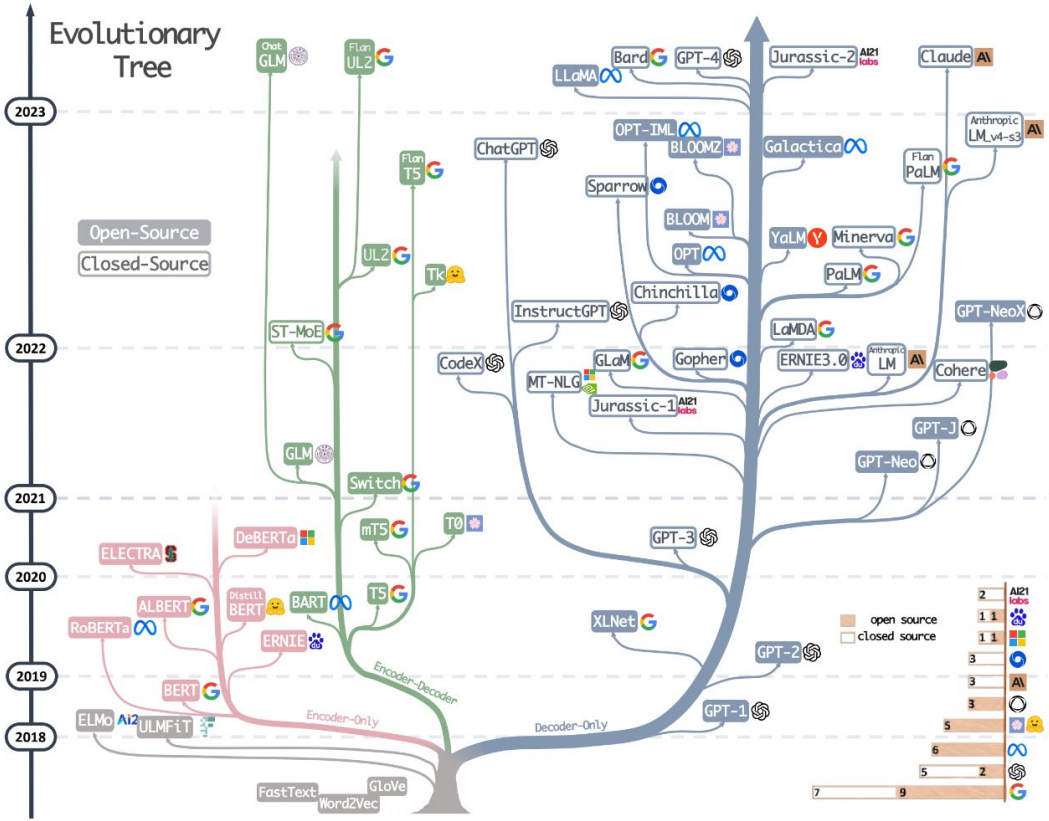
Interact with your documents in a natural way



How
did we get there?



8 billion parameters



Foundation Models are evolving at lightning speed

Source: https://arxiv.org/pdf/2304.13712

The next chapter of Generative AI innovation

Gemini

Gemini is the most capable and general model we've ever built, and is the result of a large-scale collaborative effort by teams across Google, including Google DeepMind and Google Research.

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Leverage Gemini 1.5 Pro/Flash

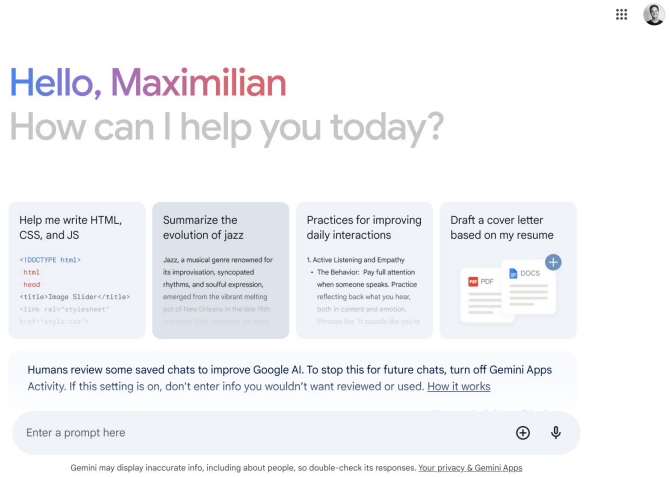
1M Context Window

tokens

How
can you benefit?

Consumers & Enterprise Customers have different needs....

Consumers — Gemini Chat



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Enterprises — Vertex AI

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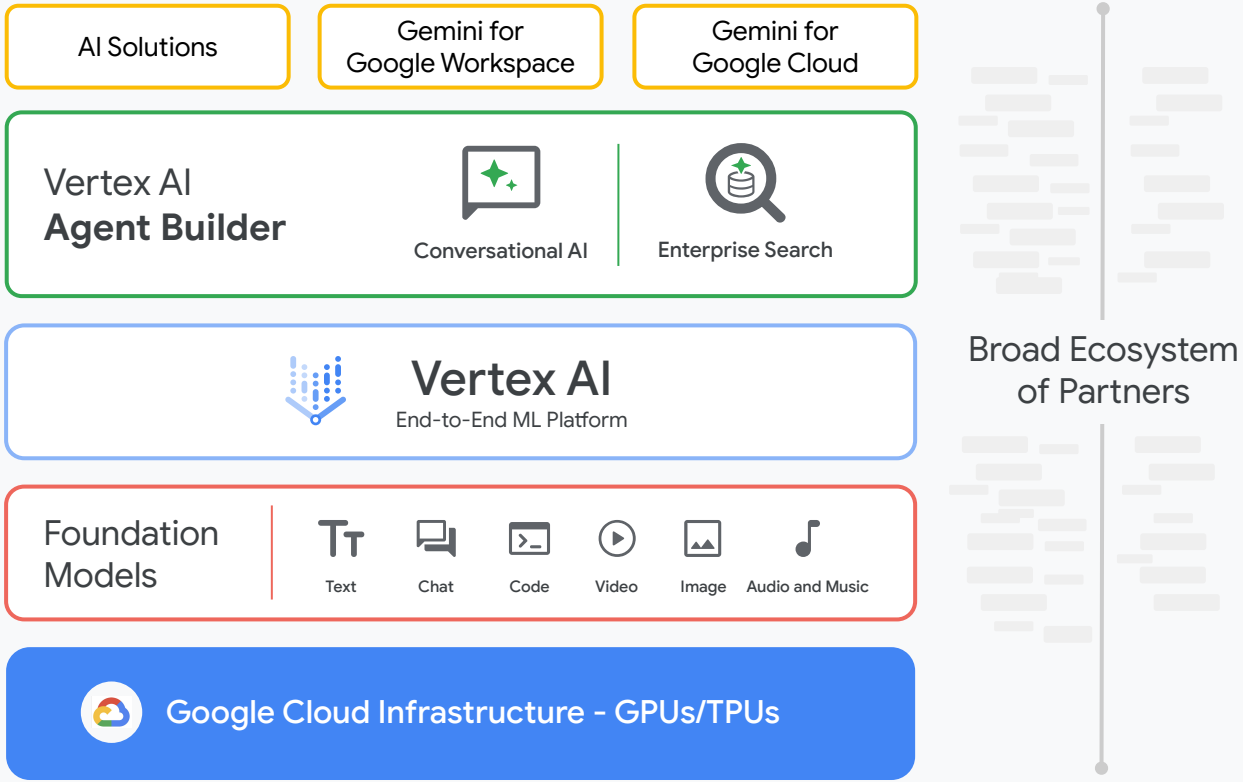
Google Cloud AI Portfolio



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Deploy AI/ML in industrial applications at scale

Google Cloud AI/ML solutions can unlock next-level efficiency and drive automation across use cases

Predictive Maintenance
Predict part failure and recommend service

Logistics AI
Scheduling and routing optimisation

Quality Prediction
Use inline process parameters to predict quality of product

Vision AI
Detect defects and monitor quality control and factory safety

Generative AI
Discover and search your product catalog and generate content

Adaptive Controls
Process manufacturing control optimization

Thank You

Google Cloud