

Beyond LLMs: Reimagining Higher Education in the Age of GenAI

Friday, February 28, 2025

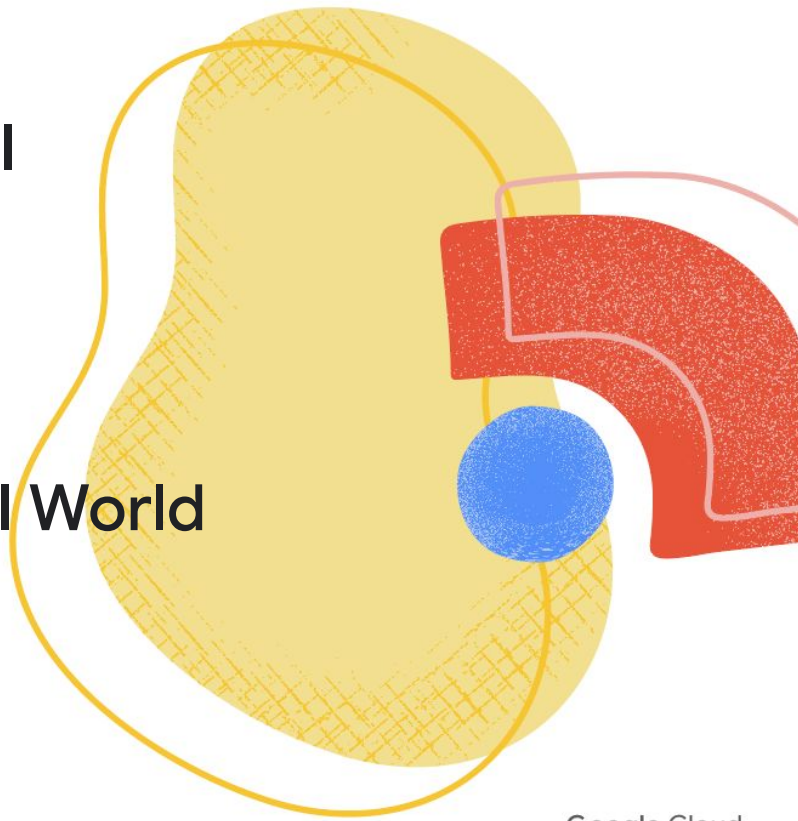
Agenda

01 The Evolving Landscape of AI

02 AI Tools in Action

03 Designing for Privacy in an AI World

04 Q&A



What is “AI” today?

Productivity Enhancer

Gemini
Meeting
Transcriptions
NotebookLM
AI-powered Tutoring
Home Automation

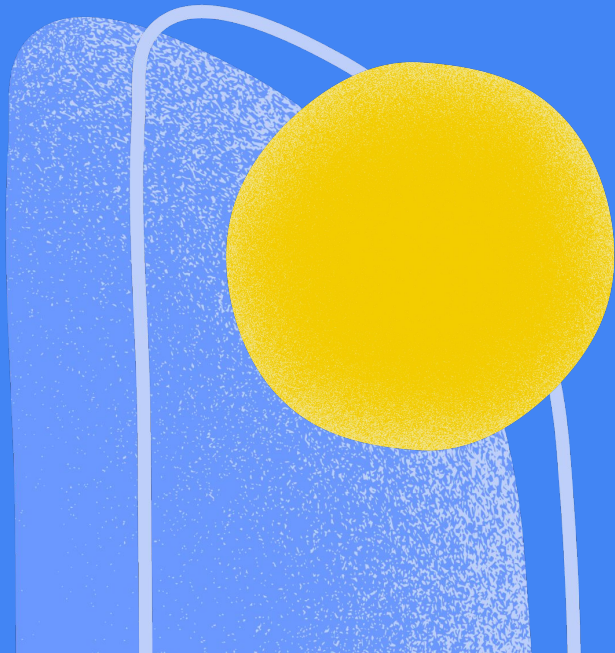
Decision Making Partner

TimesFM
AlphaGeometry
Gemini Deep Research
Function Calling

Creative Force

Veo
MusicLM
Imagen
Whisk
VideoFX

NotebookLM

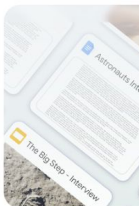


Key benefits of NotebookLM

**Keeps your data
private and secure.**



Your personal data is not used to train NotebookLM. For Google Workspace accounts, we do not log queries or answers, so data is always private to the user.



[Google Terms of Service](#) apply for NotebookLM.

**Grounded in
information you trust.**



NotebookLM grounds itself in your sources, with in-line citation for **accuracy, transparency and trust.**



Hovering over in-line citations, which take you back to the source material.

**From information
to insights in a snap.**



Materials become more **approachable** with NotebookLM's powerful summarization features.

* Notebook guide

Help me create

FAQ Study Guide Table of Contents
Timeline Briefing Doc

Summary

This document is Google's annual diversity report for 2024. It outlines the company's efforts across three categories: Our Workplace, Our Technology, and Our Partnerships. The report highlights Google's commitment to increasing diversity, equity, and inclusion through various initiatives such as hiring and retention programs, accessibility improvements, and investments in education and non-profits organizations. The report also includes a section on Data Methodology and Committing to Pay Equity, showcasing the company's transparency and commitment to fair

Audio Overview

Google Diversity Annual Report (E...
00:00 / 06:59

Suggested questions

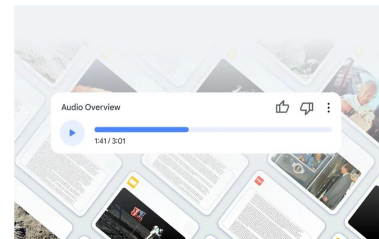
What are the key trends in Google's diversity efforts over the past...
How does Google use technology to promote diversity, equity, and i...

Showing notebook guides, which you can create with "one click".

**Multimodal
and multilingual.**



Experience the future of AI research, across many **modalities**: text, graphs, images, audio (**new!**) and in **many languages**.



Showing an audio overview, which can be created from the sources you upload.

NotebookLM

How it works:



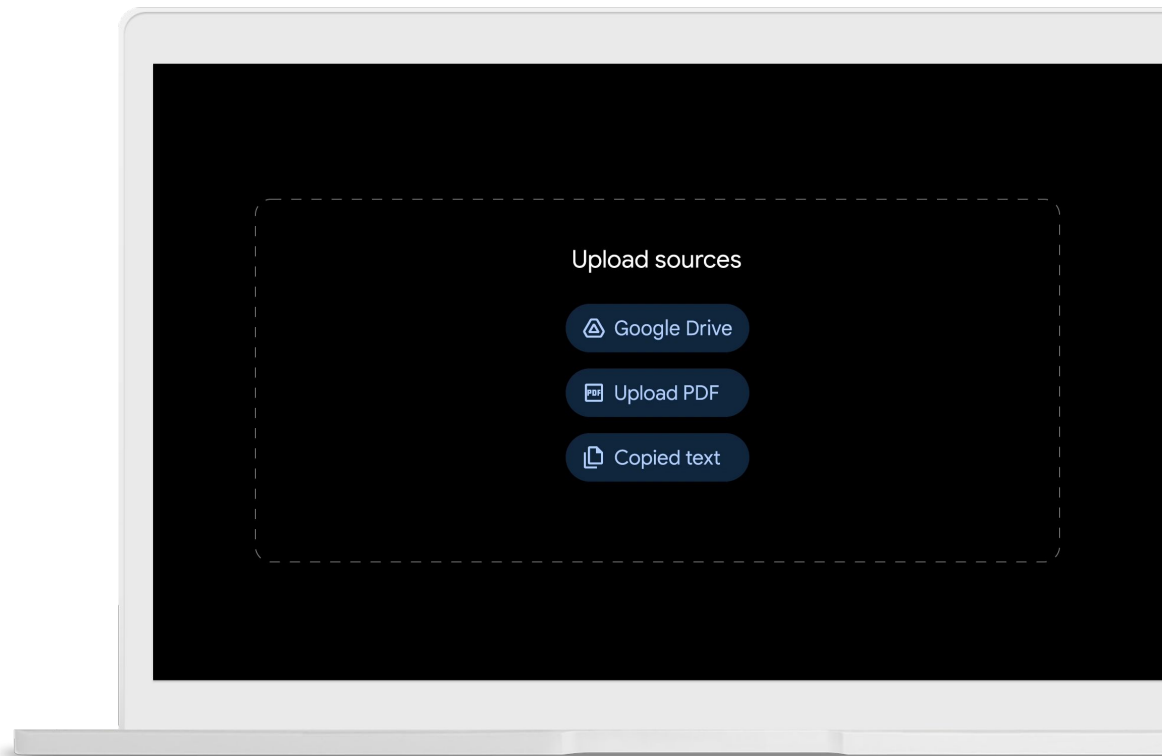
Upload sources: websites, slides, docs, PDFs, text, audio, Youtube URL. Up to 100 sources per notebook, 500,000 words per source.



Chat with your sources. Notebook will give you grounded information based on the sources.



Create audio overviews, briefing docs, paper outlines, etc.



Many ways to use it for work:



Search for information as a smart data hub.

Create any type of notebook on a specific topic: product technical specs, sales policies, user research, HR benefits, etc., and share it with your team so everyone can search and get the information they need more easily.



Overcome language barriers.

Take documents or sources in other languages and upload them into NotebookLM. Start asking questions in your native language and NotebookLM will read through the sources and respond in your native language.



Get started on work documents.

Upload interview transcript, notes, research articles, data sets and ask NotebookLM to summarize key takeaways and generate an outline for a business brief or a project proposal.



Get up to speed on dense or long material quickly.

Upload the latest company 10K, or 50 page business review document, or 20 user interviews that you did to get to insights quickly. Create an audio overview, and listen to it on the go.



Capture notes as a personal knowledge management system.

Take notes from work meetings in NotebookLM. Take all the notes and create summaries, timeline of events, flashcards, outlines for reports, etc.

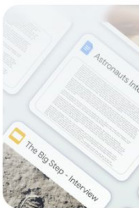
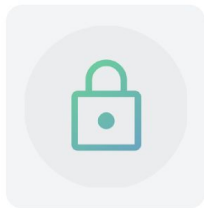
...and many more!

Key benefits of NotebookLM for Enterprise: Upleveled for the enterprise within GCP.

Highly compliant cloud environment



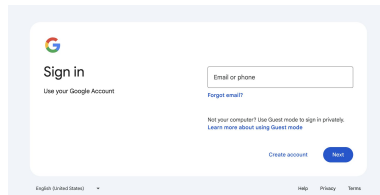
Multiple compliance standards will be supported including **SEC4(VPC-SC, DRZ, AXT, CMEK)** and **HIPAA**.



Leverage your existing corporate credentials



Easily connect to your identity provider (including **Google Identity, Okta, Azure AD, Ping**, etc) so your employees can easily SSO into their Notebooks.



Cloud IAM based sharing and permissioning



Pre-configured **Cloud IAM roles can be used to share Notebooks with other users in your GCP project**, just like any other GCP resource.

Share "HR Policies"

Only share your notebook with users who are authorized to access the data in the notebook, consistent with the [Data Security Policy](#).

Add people *

☒ Notify people

People who have access



Rohini Goyal
rohinigoyal@google.com

Owner

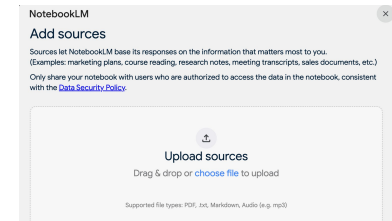
Copy link

Send

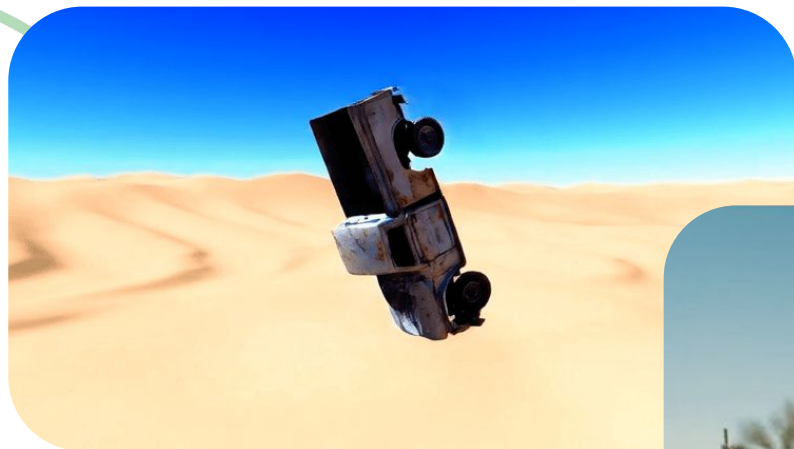
Multiple file types supported include Docx, PPTX, XLSX



Alongside PDFs, Microsoft files can be uploaded including: **Word documents, PowerPoints, and Excel spreadsheets.**



MediaAI

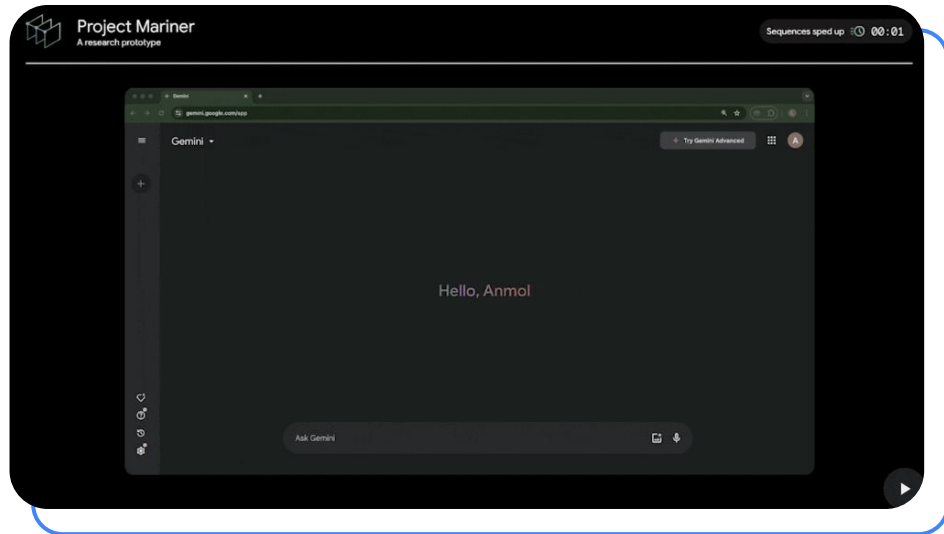


Veo 1 - Google Cloud



Veo 2 on VideoFX

Project Mariner

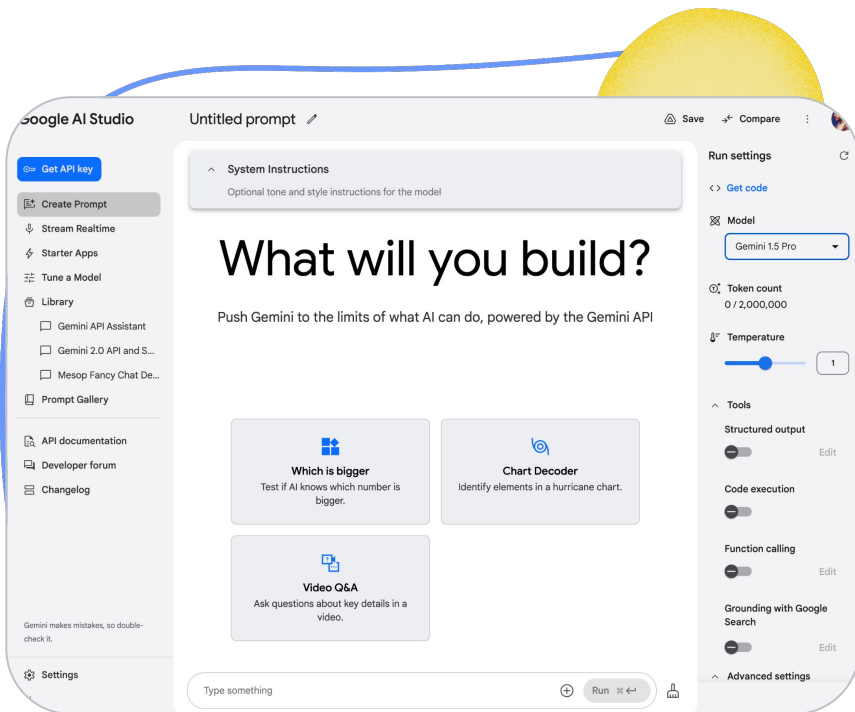


Browser Interaction

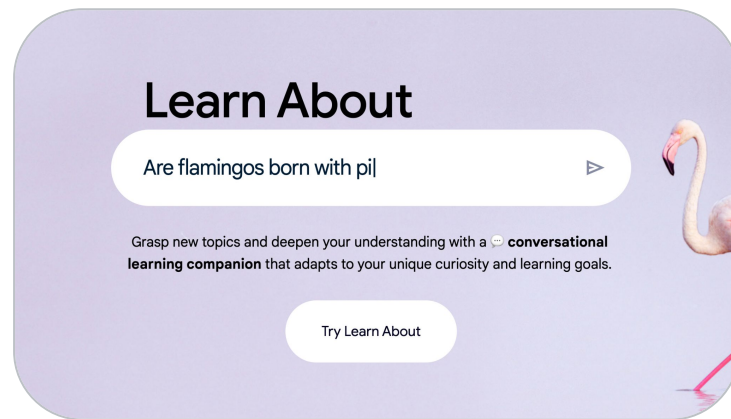
Native Multimodality

Reasoning

Tools @ Google



aistudio.google.com



labs.google.com

Google Cloud

What's new with Gemini?



Gemini

Flash 2.0

Deep Thinking*

Live API

Flash Spatial Reasoning

Proprietary + Confidential



Native Image Output

Proprietary + Confidential



Generative Agents

A Generative AI Agent is defined as an **application** that tries to achieve a **goal** by **observing** the world and **acting** upon it using the **tools** it has at its disposal.

Generative Agents

```
graph TD; A[Generative Agents] --> B[Conversational Agent]; A --> C[Workflow Agent];
```

Conversational Agent

Great for Q&A and World Knowledge
Interactions with Humans

User query triggered

Fulfill user queries or transactions

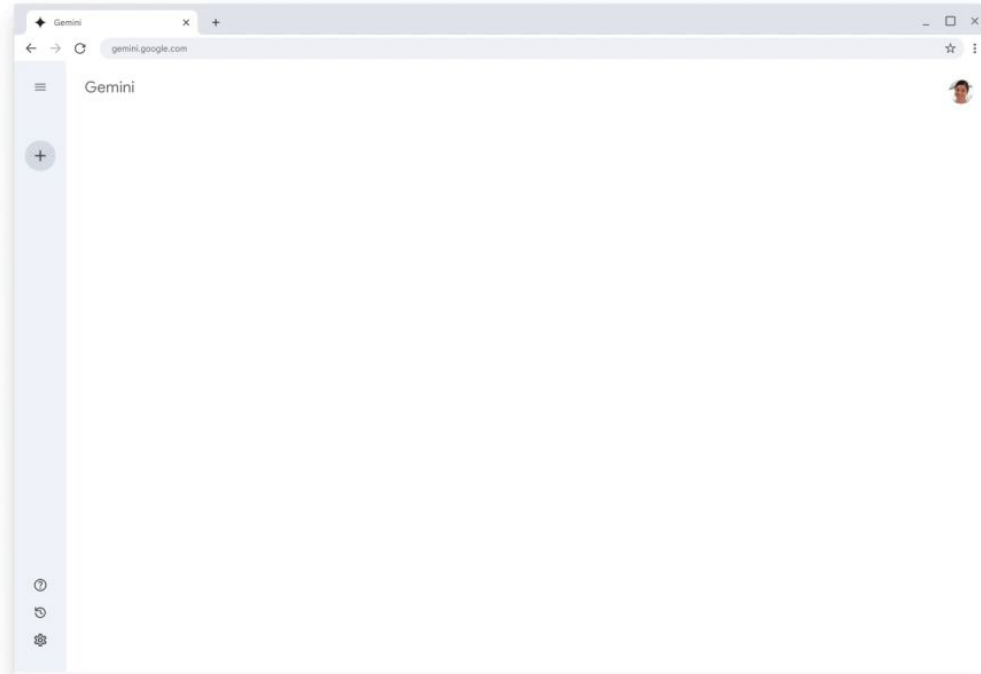
Workflow Agent

Limited or No Human Interaction often
with limited/no UI

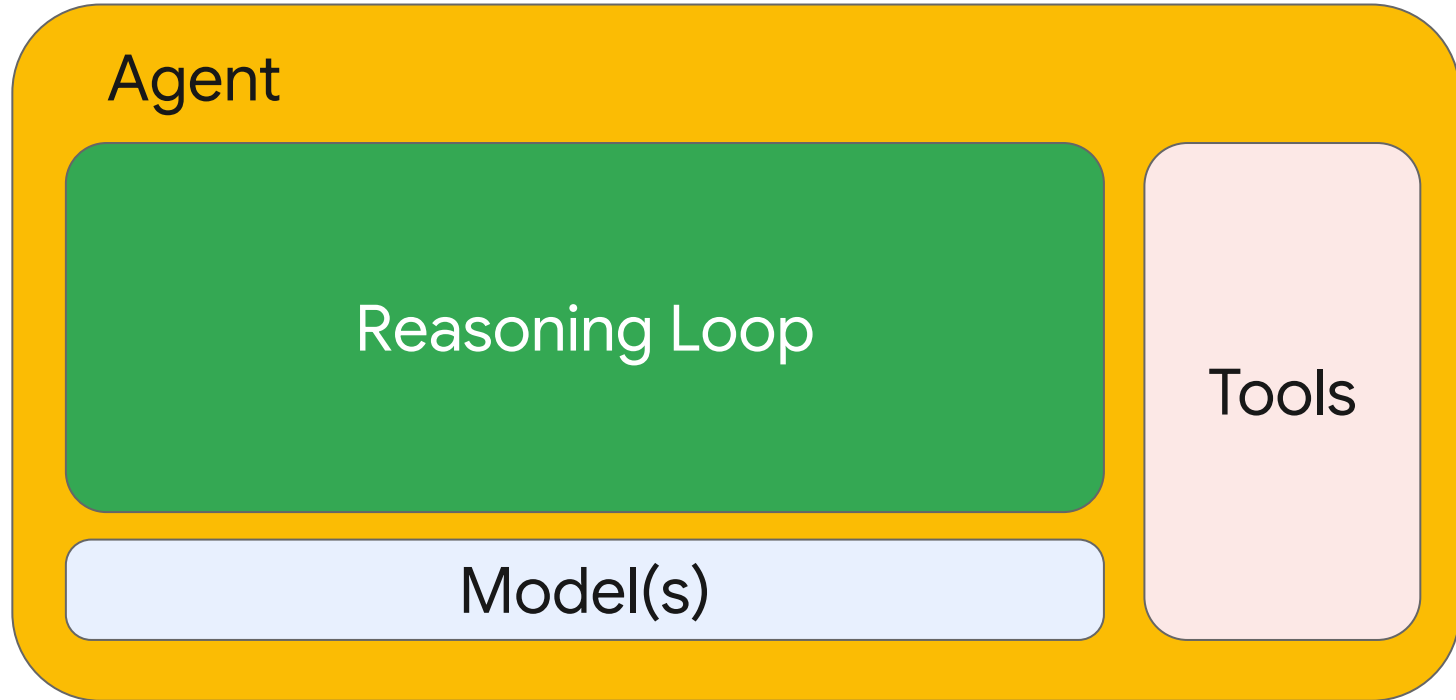
Event driven triggers

Fulfill queued tasks or chains of tasks

Gemini Chat App



Foundational Components



Foundational Components

Tools

Extensions

- Vertex Search
- Code Interpreter
- More to come...

Function Calling

- API Access/Calls
- Translation
- Real-Time Search
- Voice Interpretation

Data Stores

- Website Data
- Structured Data
- Media (Images, Audio, etc.)
- Unstructured Data

Foundational Components

Models

Multimodal or Fine-Tuned

Large or Small



Vertex AI Model Garden

Foundation Models



Gemma or Gemini Pro

Open Models



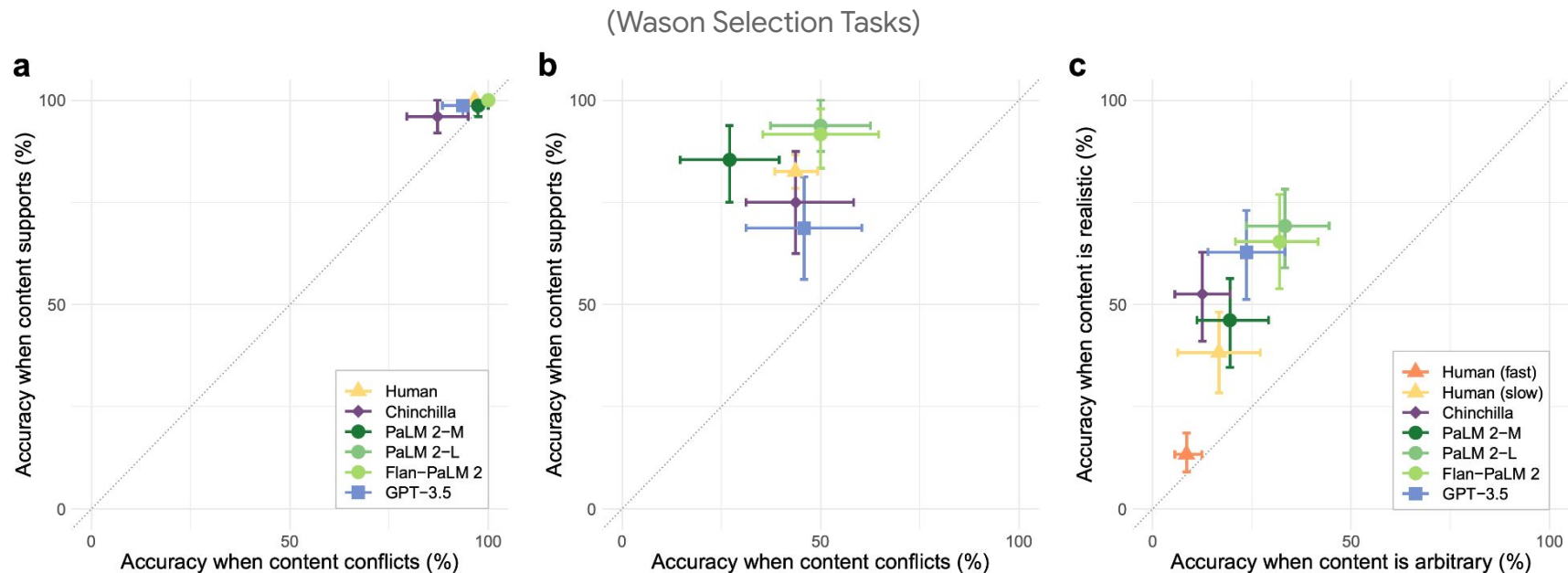
Llama 2
Code Llama



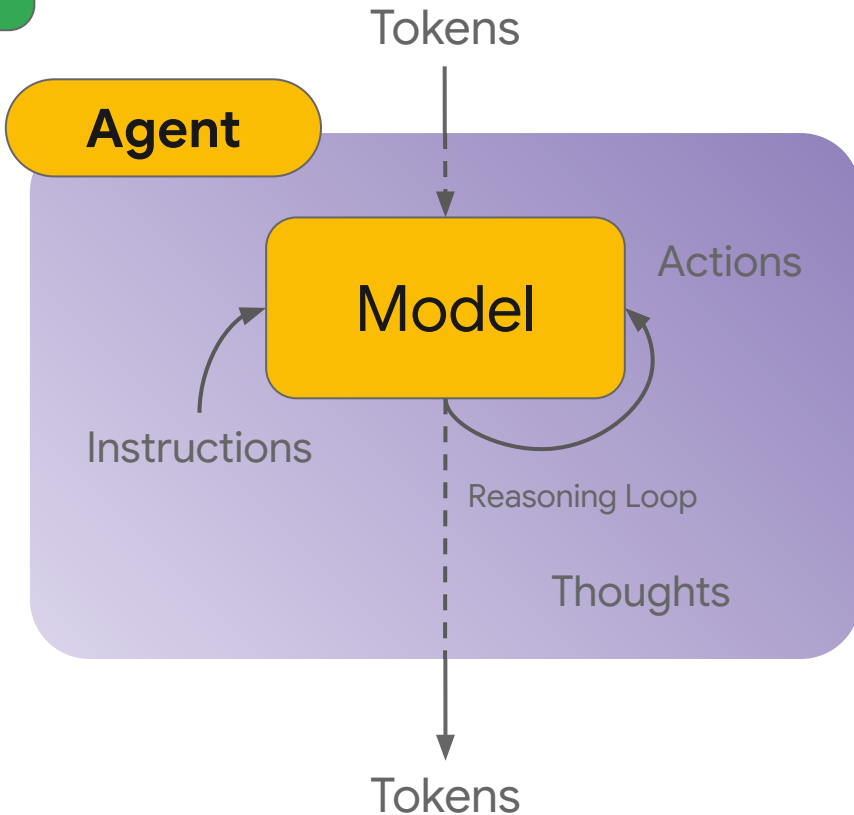
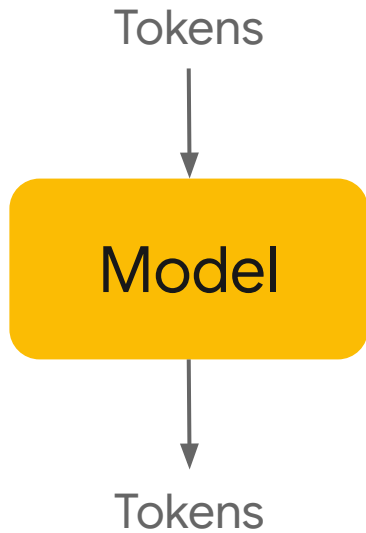
Falcon



Comparing Content Effects in Humans and LLMs



From Models to Agents



Foundational Components

Reasoning Loop

Reasoning & Planning

Task Decomposition - ex. Chain of Thought
Reflection - ex. ReAct, EAC

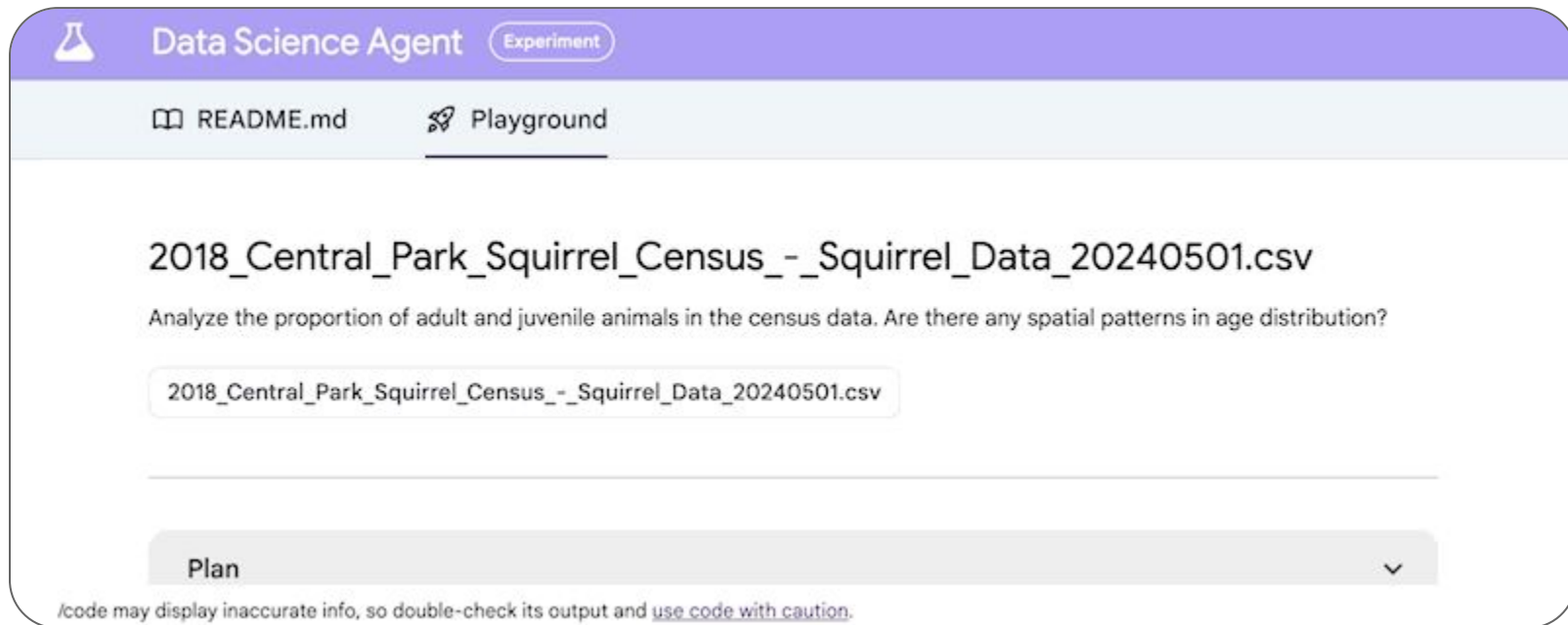
Memory

Short-term Memory - Ledger of Actions
Long-term Memory - ex. 'Log Book' of history

Profile & Instructions

How agents **think and act toward a goal**
Ex. "Act as a Data Scientist"

Data Science Agent



The screenshot shows the Data Science Agent interface. At the top, there is a purple header bar with a flask icon, the text "Data Science Agent", and a button labeled "Experiment". Below this is a light blue bar with two tabs: "README.md" and "Playground", with "Playground" being the active tab. The main content area is white and contains the following text:

2018_Central_Park_Squirrel_Census_-_Squirrel_Data_20240501.csv

Analyze the proportion of adult and juvenile animals in the census data. Are there any spatial patterns in age distribution?

2018_Central_Park_Squirrel_Census_-_Squirrel_Data_20240501.csv

Plan ▼

/code may display inaccurate info, so double-check its output and [use code with caution](#).

labs.google.com/code/dsa

Agentic Workflows: Automate, Adapt & Achieve More

Faster, more efficient integration

Reduced errors in complex processes

Faculty and Staff freed up for higher-value work

Improved students experiences

Career Pathways

AI-Powered Pathways to Your Dream Career

<https://grow.google/career-dreamer/>

Career Path Confusion

Higher education institutions often lack effective tools to help students visualize and plan their career trajectories, resulting in suboptimal program choices and missed opportunities.

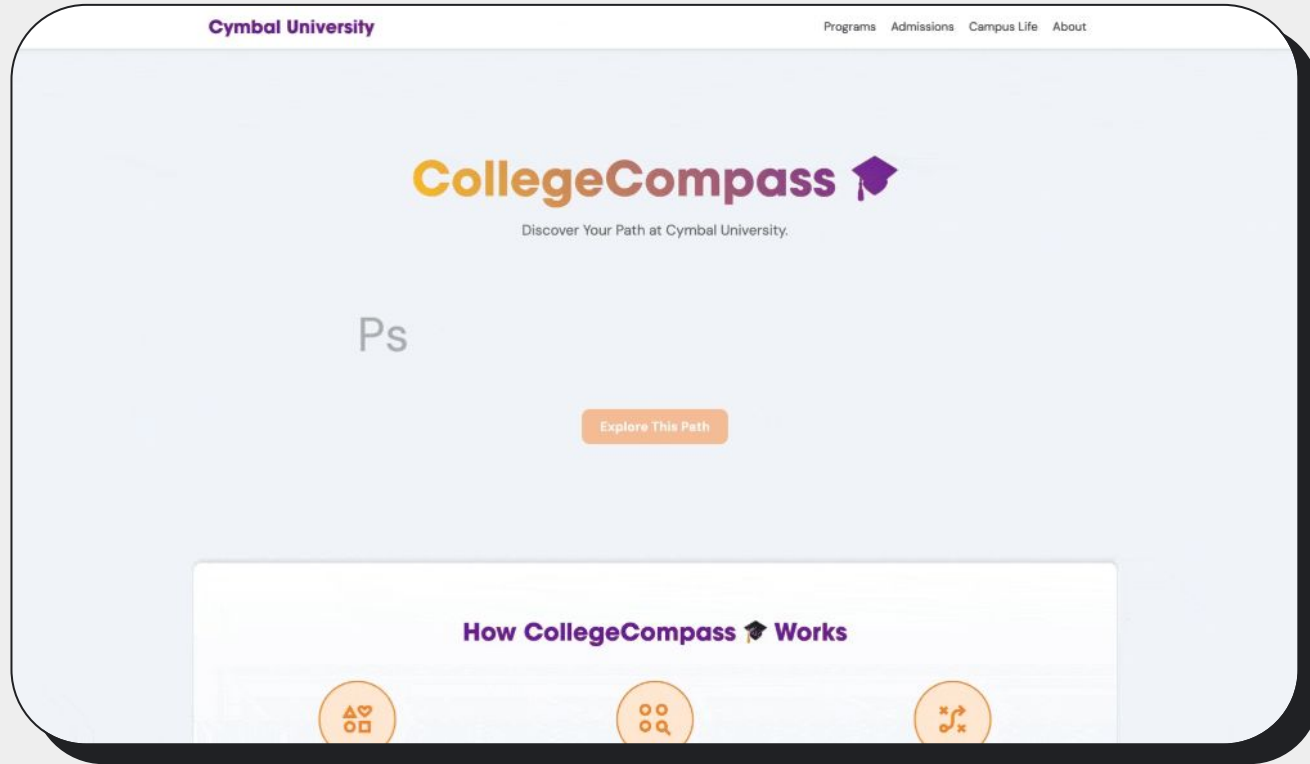
Personalization at Scale

With increasing student diversity, universities find it difficult to provide personalized career guidance and program recommendations to each student efficiently.


Skills-Degree Disconnect



Many students struggle to understand how their chosen degree programs translate into real-world skills and career opportunities, leading to uncertainty about their educational investments.

Let's reimagine the entry point with AI



Student Input

 Transcripts,
Resumes, etc.

Preference
 Data 

Student's
Performance
and
Engagement
Data

AI Context

Student
Profile

Skills
Taxonomy

Workforce
Opportunities

University
Programs



Skills Graph



Course
Details



Job Market
Data



Announcements | Last Week - AI co- scientist

[Accelerating scientific breakthroughs with an AI co-scientist](#)

Travel Concierge Demo

Powered by the Agent Framework from Vertex AI



This is an open source Travel AI Chatbot template powered by the Google Gemini model built with Next.js, AI SDK powered by Vercel and Agent SDK from Vertex AI. It uses the `created by Arun Santhanagopalan` to create a seamless chat experience for Travel industry.

Inspire me for my next Dream
Vacation
White sand beaches near
America

Help me book a flight
from San Francisco to Cancun

What weather like
in Cancun?

Send a message...



Vertex AI platform enables best-in-class predictive and generative models on best-in-class infra

AI Solution

Contact Center AI | Risk AI | Healthcare Data Engine | Search for Retail, Media and Healthcare

Gemini for Google
Cloud

Gemini for Google
Workspace

Build your own generative AI-powered agent

Vertex AI Agent Builder

OOTB and custom Agents | Search
Orchestration | Extensions | Connectors | Document Processors | Retrieval engines | Rankers | Grounding



Vertex AI Model Builder

Prompt | Serve | Tune | Distill | Eval | Notebooks | Training | Feature Store | Pipelines | Monitoring

Vertex AI Model Garden

Google | Open | Partner

Google Cloud Infrastructure (GPU/TPU) | Google Data Cloud

AI Hypercomputer: next generation AI supercomputing architecture for Cloud customers

Flexible Consumption

Dynamic Workload Scheduler

On Demand

CUD

Spot

Open Software

JAX, TensorFlow, PyTorch

Multislice Training, Multihost Inference, XLA

Google Kubernetes Engine & Compute Engine








Performance-Optimized Hardware

Compute
(AI Infrastructure)

Storage
(Block, File, Object)

Networking
(OCS, Jupiter)

Google Cloud Generative AI Github

	Description
 gemini/	Discover Gemini through starter notebooks, use cases, function calling, sample apps, and more.
 search/	Use this folder if you're interested in using Vertex AI Search , a Google-managed solution to help you rapidly build search engines for websites and across enterprise data. (Formerly known as Enterprise Search on Generative AI App Builder)
 rag-grounding/	Use this folder for information on Retrieval Augmented Generation (RAG) and Grounding with Vertex AI. This is an index of notebooks and samples across other directories focused on this topic.
 conversation/	Use this folder if you're interested in using Vertex AI Conversation , a Google-managed solution to help you rapidly build chat bots for websites and across enterprise data. (Formerly known as Chat Apps on Generative AI App Builder)
 language/	Use this folder if you're interested in building your own solutions from scratch using Google's language foundation models (Vertex AI PaLM API).
 vision/	Use this folder if you're interested in building your own solutions from scratch using features from Imagen on Vertex AI (Vertex AI Imagen API). These are the features that Imagen on Vertex AI offers: <ul style="list-style-type: none">• Image generation• Image editing• Visual captioning• Visual question answering
 audio/	Use this folder if you're interested in building your own solutions from scratch using features from Chirp, a version of Google's Universal Speech Model (USM) on Vertex AI (Vertex AI Chirp API).



github.com/GoogleCloudPlatform/generative-ai

Vertex AI Cookbook

Generative AI on Vertex AI > Documentation

Was this helpful?  

Generative AI on Vertex AI Cookbook



[Send feedback](#)

A collection of guides and examples for Generative AI on Vertex AI.

Explore more in the [Generative AI Repository on GitHub](#).

Gemini Quickstarts



Intro to Gemini 2.0 Flash

Get started with Gemini 2.0 in Vertex AI with the Gen AI Python SDK.

[GEMINI](#)

[View on GitHub](#) →



Intro to Prompt Engineering

Learn the essentials and best practices of prompt engineering.

[GEMINI](#) [PROMPTING](#)

[View on GitHub](#) →



Function Calling with Gemini

Connect Gemini to external tools using function calling.

[FUNCTION CALLING](#) [GEMINI](#)

[View on GitHub](#) →



Grounding with Gemini

Connect Gemini to real-world data from Google Search or Vertex AI Search to improve response quality.

[GEMINI](#) [GROUNDING](#) [RAG](#)

[SEARCH](#)

[View on GitHub](#) →



Gemini Batch prediction

Use Batch Prediction to run inference on a large number of examples.

[BATCH PREDICTION](#) [GEMINI](#)

[View on GitHub](#) →



Long Context Window

Use the Long Context Window to process large amounts of multimodal data.

[GEMINI](#)

[View on GitHub](#) →

All Tutorials

Filter by: [Categories \(1\)](#) ▾

Search for...

[GEMINI](#)

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[GEMINI](#)

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[RAG](#)

[SEARCH](#)

[BATCH PREDICTION](#)

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[GEMINI](#)

Use Batch Prediction to run inference on a large number of examples.

[GEMINI](#)

Long Context Window

Use the Long Context Window to process large amounts of multimodal data.

[GEMINI](#)

Intro to Context Caching

Use context caching to store frequently used data.

[GEMINI](#)

Intro to Controlled Generation with the Gemini API

Learn to control Gemini API output formats for easier data processing.



goo.gle/vertex-ai-cookbook

Data privacy commitments:

- 01 Customers own their data, not Google.
- 02 We guard against insider access to data.
- 03 Google **never sells customer data** to third parties.
- 04 Your data is **not used to train Google models**.
- 05 Google **does not** use customer data for advertising.
- 06 Your data is **not used to train** models for any other customer.

Q&A

Thank You

Google Cloud