



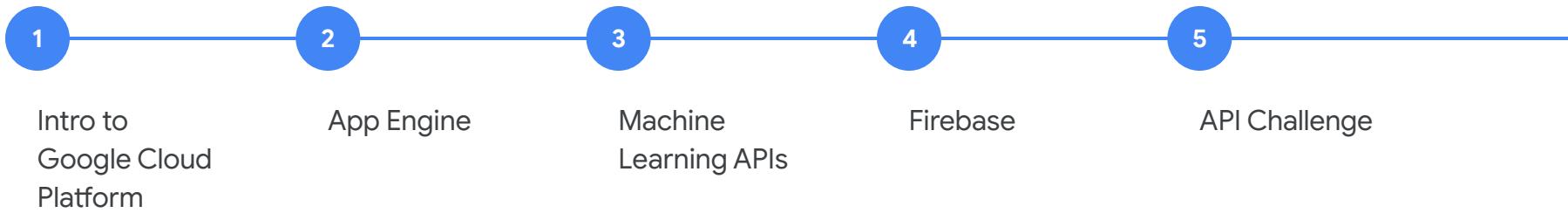
Three Powerful Google Cloud Products for Your Project

Alison Gale (Software Engineer)

Citrus Hack 2019

Google Cloud

Agenda



Dictionary

cloud



cloud

/klaʊd/

noun

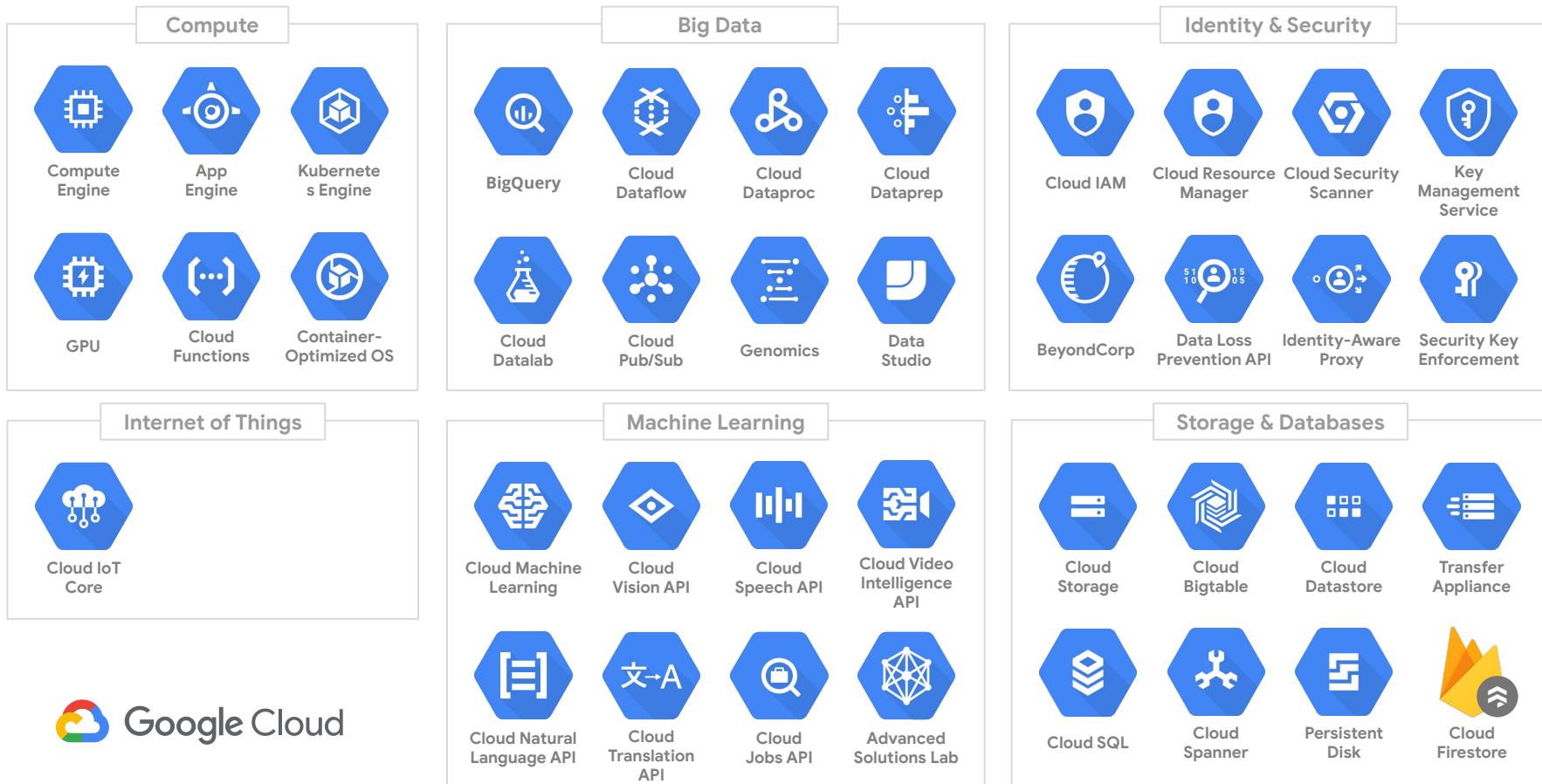
1. **Getting things done using someone else's computers**, especially where someone else worries about maintenance, provisioning, system administration, security, networking, failure recover, etc.

What is Google Cloud Platform?

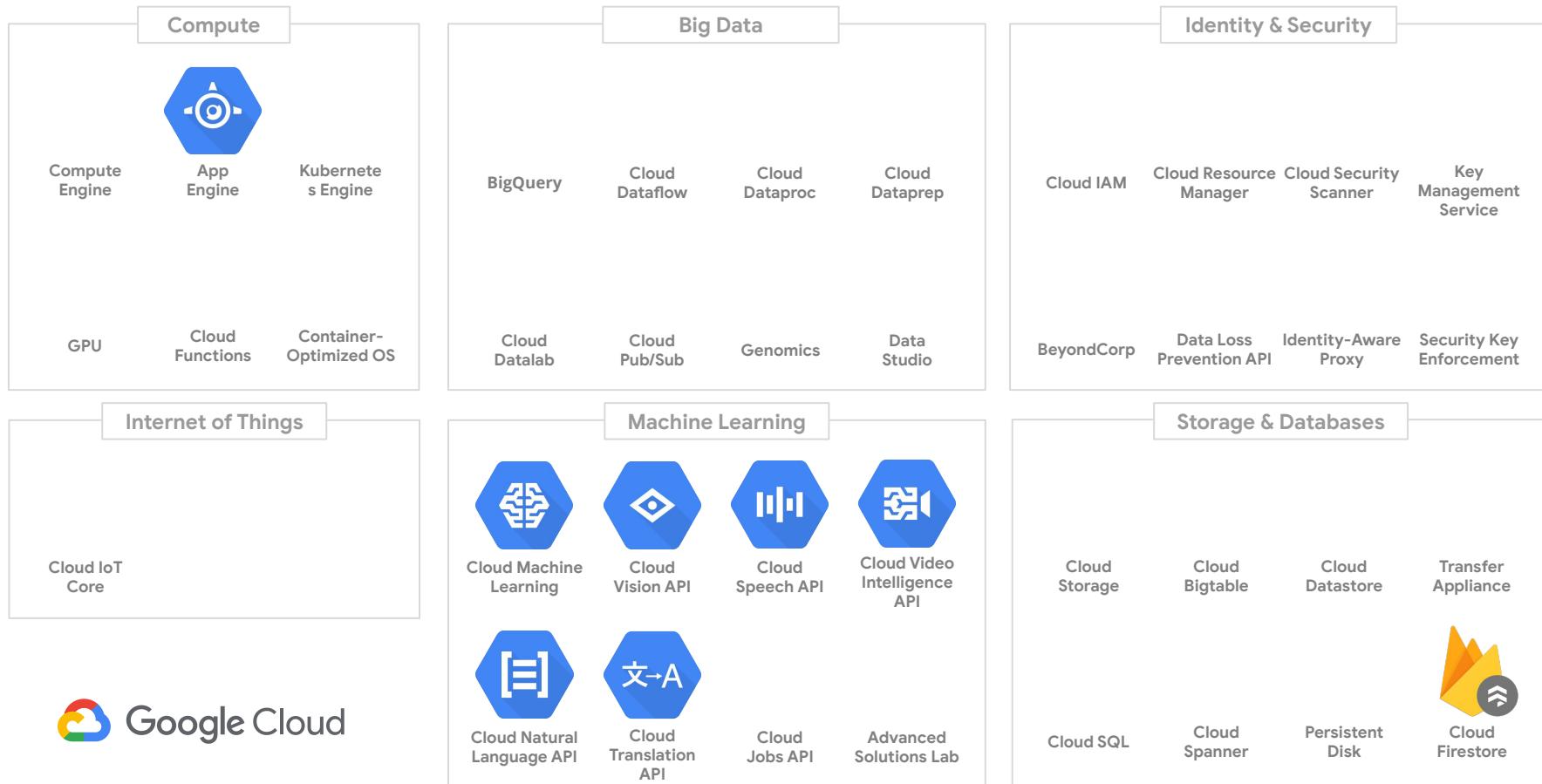
Google Cloud Platform lets you build and host applications and websites, store data, and analyze data, all on Google's highly scalable and reliable computing infrastructure.



Google Cloud Platform Products



Google Cloud Platform Products (tl;dr)



App Engine

- **Deploy web apps** and mobile backends to the Cloud
- “Platform as a service” product
- Managed application platform that lets you focus on your code
- Autoscaling, load balancing, traffic splitting for A/B testing, error reporting, and more!



App Engine - Example

app.yaml

```
runtime: python27
api_version: 1
threadsafe: true

handlers:
- url: /
  static_files: www/index.html
  upload: www/index.html

- url: /(.*)
  static_files: www/\1
  upload: www/(.*)
```



App Engine - Custom Domains

- App Engine generates:
my-project.appspot.com
- You want: mycoolproject.com
- Set up a custom domain
 - App Engine -> Settings -> Custom Domain



App Engine Demo

[Python Flask App Tutorial](#)



Machine Learning on Google Cloud





Puppy
or
Muffin?



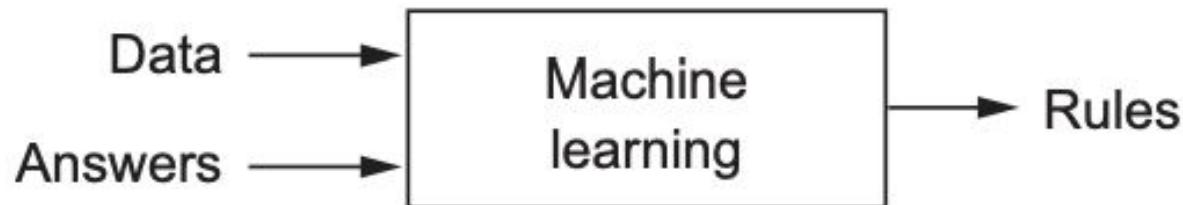
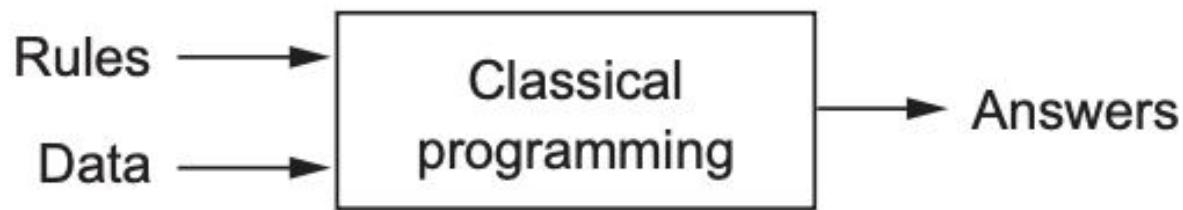


“The brown quick fox jumps over the lazy dog.”

Syntax rules for adjective order in English:

- Quantity or number
- Quality or opinion
- Size
- Age
- Shape
- Colour
- Proper adjective (often nationality, place of origin, or material)
- Purpose or qualifier

**Machine learning is learning
from rules plus experience.**



What is Machine Learning?

- “Machine Learning is the study of computer algorithms that improve automatically through experience.” ~IEEE
- “Machine Learning is using data to answer questions.” ~Yufeng Guo, Developer Advocate at Google
- Data -> Model -> Prediction

Google PhotosThe background of the entire image is a photograph of a massive, translucent blue iceberg floating in dark water under a cloudy sky. A black smartphone is centered in the foreground, displaying the Google Photos mobile application. The screen shows a search results page for the query "Dogs". At the top, there's a back arrow, the search term "Dogs", a close button, and a more options menu. Below this, the date "Feb 28" is displayed above a grid of four photos showing dogs. The date "Feb 26" is then shown above a larger grid of twelve photos. The bottom portion of the screen is blank, suggesting a scrollable list of images.

← Dogs

Feb 28



Feb 26





“Ok Google”

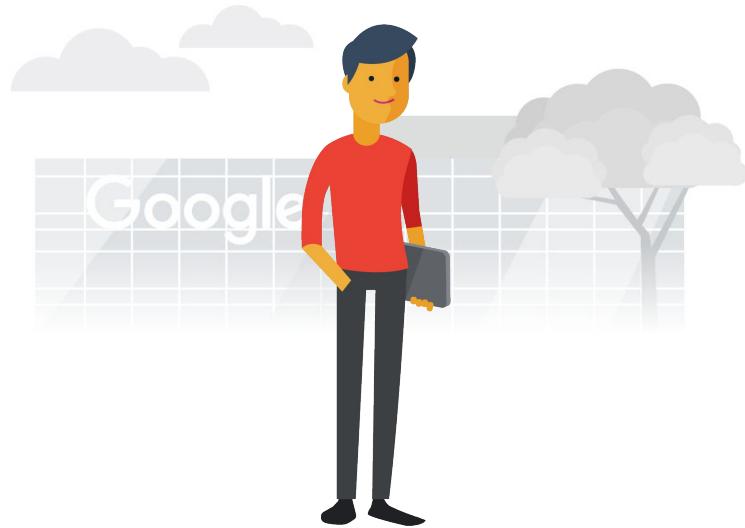


Google Translate



Google Cloud Machine Learning APIs

- **Gain insights from data** using Google Cloud's pre-trained machine learning models
- Leverage same technology as Google Photos and Google Assistant
- Require ZERO prior knowledge of ML



Google Cloud Machine Learning APIs



[Vision](#)



[Video
Intelligence](#)



[Speech](#)



[Natural
Language](#)



[Translation](#)

Firebase



What is Firebase?



Cloud Firestore

iOS



Hosting



Authentication

iOS C++



ML Kit

iOS



Cloud Storage

iOS C++



Cloud Functions

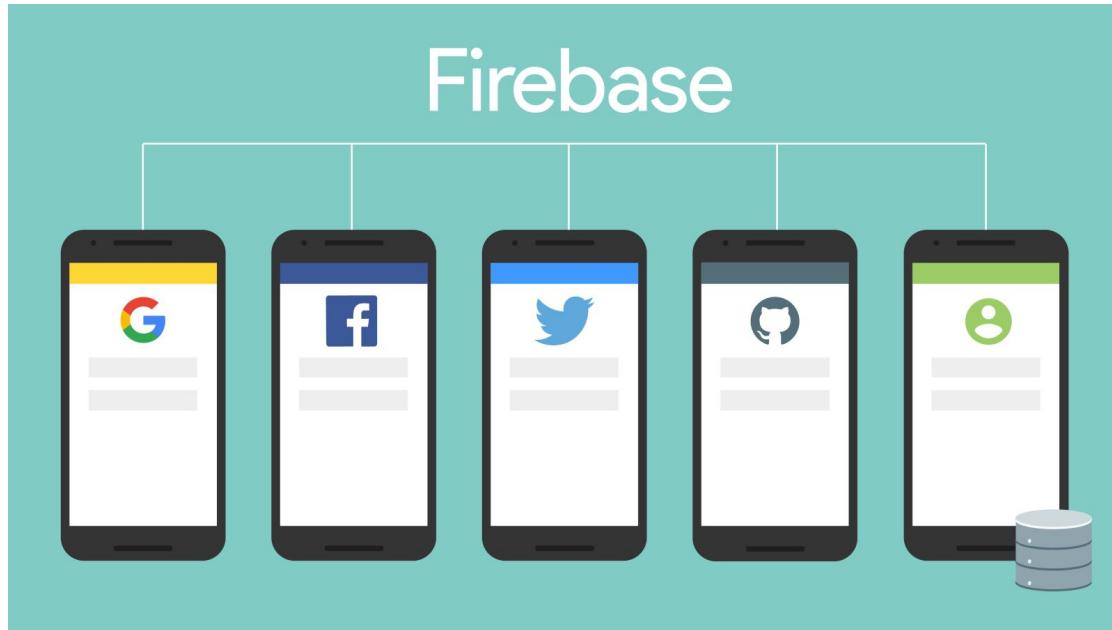
iOS C++



Realtime Database

iOS C++

Firebase Authentication

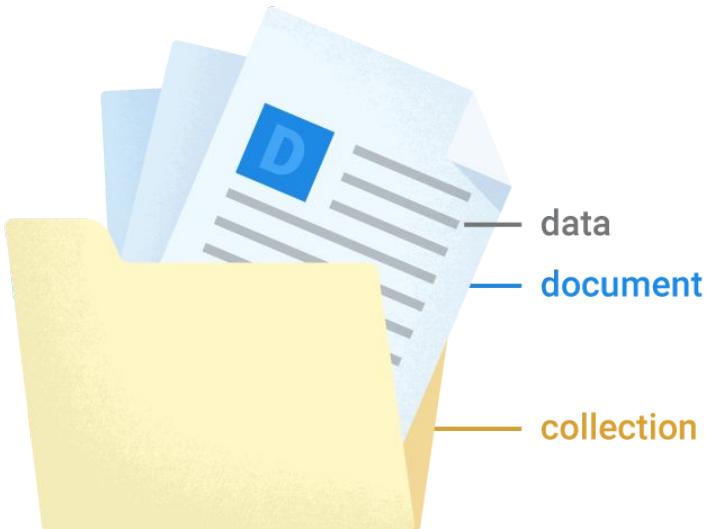


Cloud Firestore

- Powerful NoSQL realtime database
- Ordinary database - query database for new updates
- Realtime database - automatically receive updates when the database is updated
 - Set up a listener object on the client



Cloud Firestore - Data Model



 users
 alovelace
first : "Ada"
last : "Lovelace"
born : 1815
 sride
first : "Sally"
last : "Ride"
born : 1951

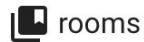
Cloud Firestore

Demo

ratesomecats.com



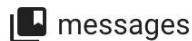
Cloud Firestore - Subcollections



rooms



name : "my chat room"

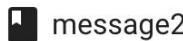


messages



from : "alex"

msg : "Hello World!"



message2

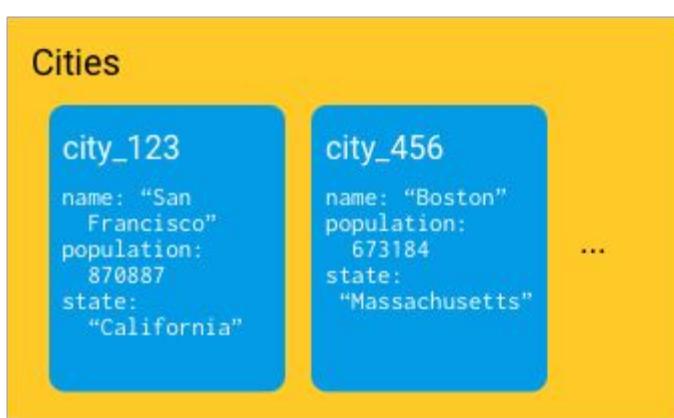
...



roomB

...

Cloud Firestore - Easy Querying



```
citiesRef  
.where("state", "==", "California")  
.where("population", ">", 500000)
```

Cloud Firestore - Key Advantages

- Highly scalable database
- Multi-regional data replication
- Strong consistency
- Robust client libraries (iOS, Android, front-end Javascript, Node.js, Python, Ruby, Java, PHP, Go, and .NET)



API Challenge

Best Use of Google Cloud - use any Google Cloud product (Firebase counts!) to qualify.

Every member of the winning team receives:

- Google Home Mini
- Patagonia Backpack
- Cloud Pillow
- Acrylic Trophy
- Water Bottle



Google Cloud Credit Coupons

Check for an email from Major League Hacking (MLH) to activate \$100 in Google Cloud free credits!



<< Test First Name >>,

We're excited that you've registered or applied for << Test Most Recent Event >> this weekend, and can't wait to see what you build.

To get started, Google Cloud and MLH are sharing \$100 of free Google Cloud credits. This gives you access to use the same tools and infrastructure that power Google products for your own project.

Claim your credits:

1. Login to your preferred [Google Account](#) to use during << Test Most Recent Event >>.
2. Make sure you can access console.cloud.google.com while signed in.

Some account domains don't have GCP enabled. If you receive an error message when signing into console.cloud.google.com, use a different account.

[CLAIM CREDITS](#)



Resources

- **Cloud Vision API** - <https://cloud.google.com/vision/docs/>
- **ML API Code Samples** -
<https://github.com/ryanmats/gcp-hackathon-demos>
- **Google Cloud AI Products** -
<https://cloud.google.com/products/ai/>
- **App Engine** - <https://cloud.google.com/appengine/>
- **Firebase** - <https://firebase.google.com/>

Questions or Need Help?

