Google Cloud Platform AI & ML Services

Janakiram MSV

Learning Objectives

- Overview of Machine Learning & Artificial Intelligence Services
- Cloud AI Building Blocks
- Cloud AutoML
- AI Platform
- AI Hub
- Demo: Image Recognition with Cloud Vision API
- Use Cases of ML & AI Services

GCP AI & ML Services

Overview of GCP AI & ML Services

- AI Building Blocks provide AI through simple REST calls
- Cloud AutoML enables training models on custom datasets
- AI Platform provides end-to-end ML pipelines on-premises and cloud
- AI Hub is a Google hosted repository to discover, share, and deploy ML models
- Google Cloud Platform offers comprehensive set of ML & AI services for beginners and advanced AI engineers

GCP AI Building Blocks

GCP AI Building Blocks

SIGHT

Vision
Derive insights from images in the cloud or at the edge.

Video
Enable powerful content discovery and engaging video experiences.

CONVERSATION

Dialogflow
Build virtual agents and other conversational experiences.

Cloud Text-to-Speech API
Convert text to human-like speech using WaveNet voices.

Cloud Speech-to-Text API
Convert speech to text automatically with outstanding accuracy.

LANGUAGE

Translation
Dynamically detect and translate between languages.

Natural Language
Reveal the structure and meaning of text through machine learning.

STRUCTURED DATA

AutoML Tables
Automatically build and deploy state-of-the-art machine learning models on structured data.

Recommendations AI
Deliver highly personalized product recommendations at scale.

Cloud Inference API
Quickly run large-scale correlations over typed time-series datasets.
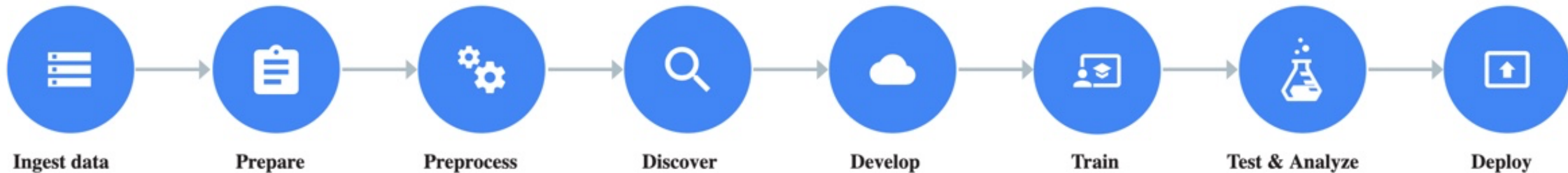
Google Cloud AutoML

Google Cloud AutoML

- Cloud AutoML enables training high-quality models specific to a business problem
- Custom machine learning models without writing code
- Based on Google's state-of-the-art machine learning algorithms
- AutoML Services
  - **Sight**
    - Vision
    - Video Intelligence
  - **Language**
    - Natural Language
    - Translation
  - **Structure Data**
    - Tabular data

Google AI Platform

Google AI Platform

- Covers the entire spectrum of machine learning pipelines
- Built on Kubeflow, an open source ML project based on Kubernetes
- Includes tools for data preparation, training, and inference

Ingest data → Prepare → Preprocess → Discover → Develop → Train → Test & Analyze → Deploy

Google AI Hub

Google Cloud AI Hub

- Hosted repository of plug-and-play AI components
- Makes it easy for data scientists and teams to collaborate
- Contains private and public content
- AI Hub includes
  - Kubeflow Pipeline components
  - Jupyter Notebooks
  - TensorFlow modules
  - VM Images
  - Trained models
  - ...

GCP ML & AI Services – Use Cases

Use Cases of GCP ML & AI Services

Product	Service Type	Key Feature	Use Case
Cloud Building Blocks	REST API Endpoint	Simple API for vision, language, and data	Infuse AI into apps with one API call
Cloud AutoML	Models based on custom data	No-code approach to training high-quality models	Train and deploy models custom datasets
AI Platform	ML Pipelines	Open and portable framework for ML	Train ML models on-prem and deploy it in the cloud
AI Hub	ML Artifact repository	Sharable directory of various ML components	Reuse existing TensorFlow models shared by other users

Google Cloud Platform Fundamentals

Resources for Google Cloud AI & ML

Key Links
- Cloud AI Building Blocks
- Cloud AutoML
- AI Platform
- AI Hub

References
- GCP AI & ML Products
- AI Solutions
- AI Experiments

Janakiram MSV

janakiram.com