Azure AI + ML Services and Platform

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Azure AI Infrastructure

- AI Compute
  - Data Science Virtual Machine (DSVM)
  - Containers
  - AKS
  - Spark
- AI Data
  - Azur Cosmos DB
  - Azure SQL Storage
  - Azure Data Lake
- AI ETL
  - Azure Data Factory
- AI Integration
  - Azure Logic App
  - Azure Function
- Vizulization
  - Power BI
- AI Analytics
  - Application Insights

Azure Machine Learning

- Tools, IDE and Utilities
  - Azure Notebook
  - Azure ML Studio
  - Azure ML Workbench
  - Visual Studio / Visual Studio Code
  - Pycharm
  - Jypyter Notebook
- ML Lifecycle Support

Azure ML Lifecycle

1. Data Preparation
   - Data Labeling
   - Data Preparation
   - Data Set Creation
2. Build and Train Model
   - Auto ML
   - Notebooks
   - Compute Instance
   - Experiments
   - IDE Integration
   - Reinforcement Learning
3. Model Validation and Deployment
   - Management Endpoint
   - CI & CD Pipeline
   - Model Images / Model Repository
4. Monitor & Manage
   - Data Drift
   - Audit Trail
   - Error Analysis

- Machine learning operations (MLOps)
  - ML Lifecycle +
    - Accelerate the machine learning lifecycle
      - Reproduceable ML Model
      - Deploy Model at Scale
      - Automated CI & CD for Models
      - Manage, Monitor Multiple Projects at Scale
- Hybrid & Multicloud Integration
- Enterprise Grade Security

SDKs

- .NET - C# SDK
- Java SDK
- Python SDK
- GO SDK
- Node.js

Applied AI Services

Ready-to-deploy AI solutions.

- Form Recognizer — Document extraction service for Forms, Invoices etc based on OCR API Services
- Immersive Reader — Provides extensive abilities to read and comprehend text
- Metrics Advisor — A fully managed AI service that monitors metrics and diagnoses issues
- Video Analyzer — Powerful AI Service for building video analytics solutions
- Cognitive Serarch — Enterprise scale AI Enabled search for app development
- Azure Bot Services — Create bots and connect them across channels

Prebuilt and Trained AI models from Azure Cognitive Services, built-in business logic, programming, orchestration

Azure Cognitive Services

- Vision
  - **Identify and analyze content within images and videos**
    - Computer Vision API
      - Optical Character Recognition (OCR)
      - Image Understanding
        - Content Tag
        - Image Description
        - Face Detectation
        - Object Detectation
        - Image Categorization
      - Spatial Analysis
        - Zone and Line Placement
        - Camera Placement
    - Custom Vision
    - Face API
      - Face Verification
      - Face Detection
- Speech
  - **Improved Application experiences by Enabling Speech Services**
    - Speaker Recognition
    - Speech to Text
    - Speech Translation
    - Text to Speech
    - Intent Recognition
- Language
  - **Understand conversations and unstructured text and analyze them**
    - Translator
    - Conversational language understanding
    - Question answering
    - Linguistic Analysis
    - Web Language Model
    - Sentiment Analysis
    - Entity Recognition
- Decision
  - **Make decisions faster**
    - Anomaly Detecter
    - Content Moderator
    - Personalizer
- OpenAI — OpenAI Service — Dynamic language models