Databricks

Unifying Data Science and Engineering

The beginnings of Apache Spark at UC Berkeley

AMPLab funded by tech companies:

twitter facebook. Google

- Got a glimpse at their most impactful internal projects
- They were leveraging massive amounts of data
- Doing high impact machine learning/AI

We wanted to democratize Data + AI

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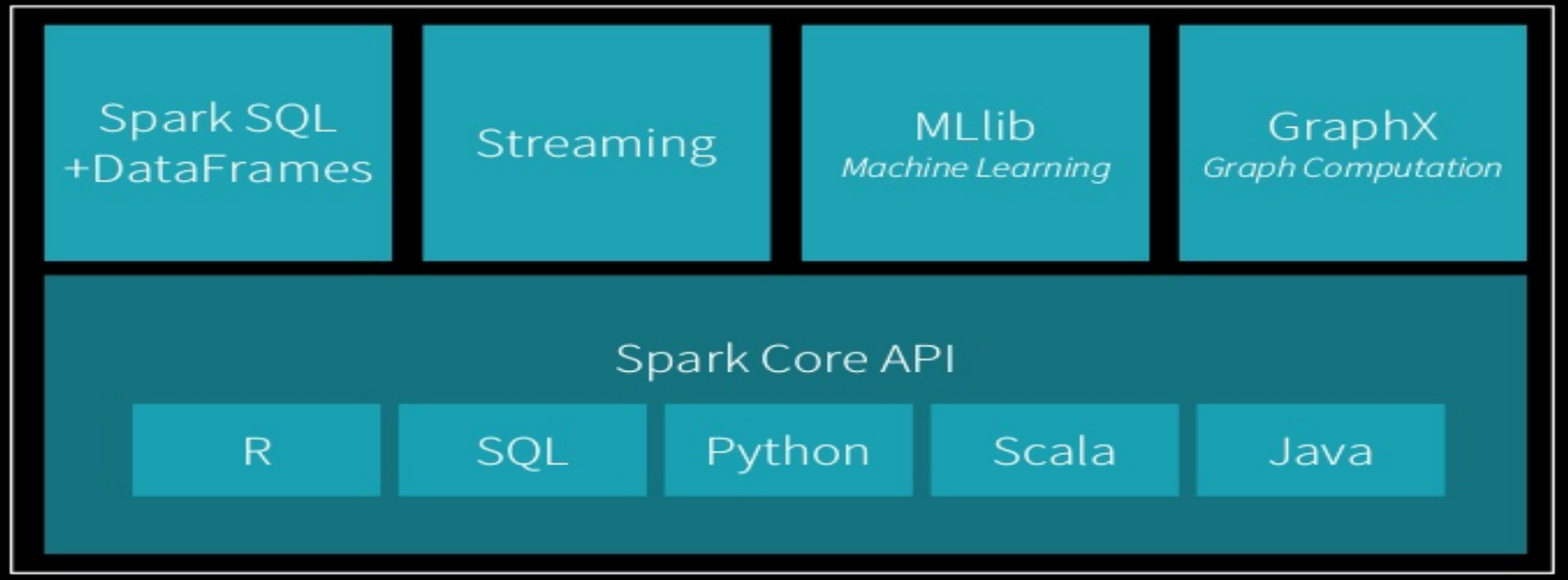
Apache Spark



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Databricks started in 2013

Bring Apache Spark to the Enterprise

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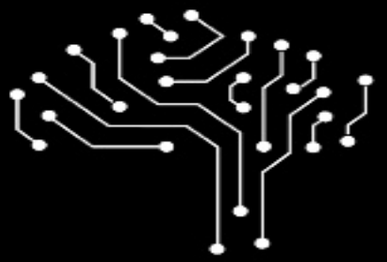
Only 1% of enterprises successful with AI

Other 99% struggle due to organizational silos

IT

Java
Parquet
TERADATA
S3
mongoDB
ORACLE
hadoop
kafka
C++
Scala

Line of Business



Keras
python
PYTORCH
learn
mxnet
TensorFlow

Data Engineers

Data Scientists

databricks

Databricks goal is to unify data science & engineering

3 challenges created by data & AI divide

1. Data is not ready for AI
2. Data and AI technology silos
3. Data scientists and engineers are in silos

1 Data is not ready for AI

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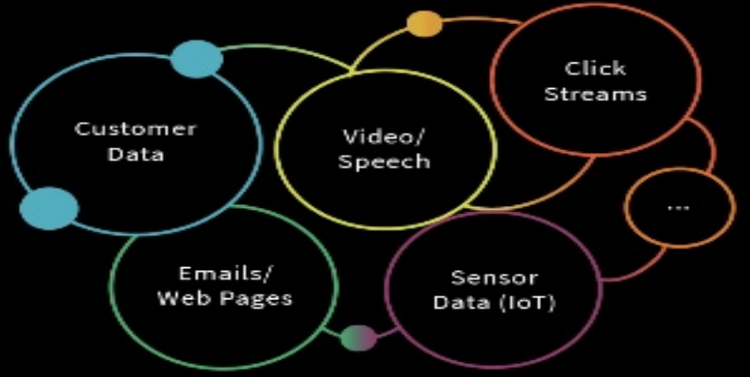
Massive data in data lakes



Data Lake

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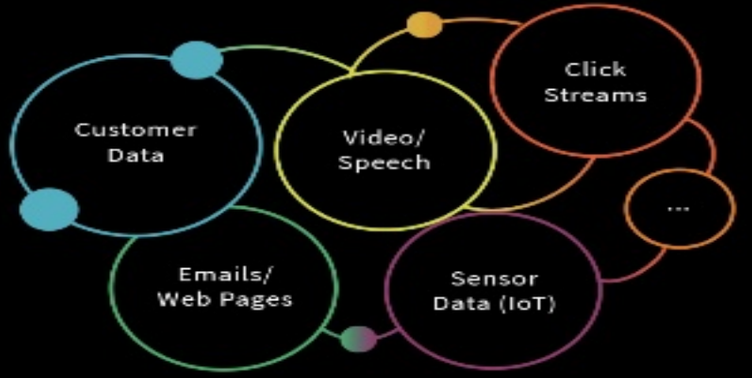
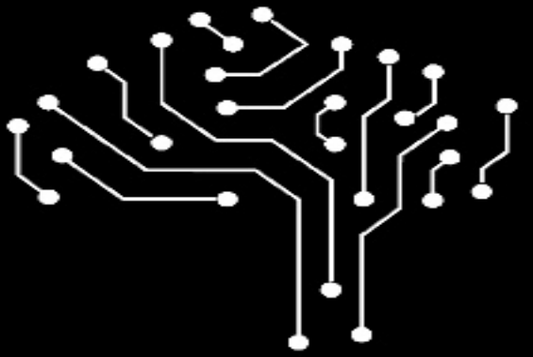
Vision to do AI on that data



Data Lake



AI

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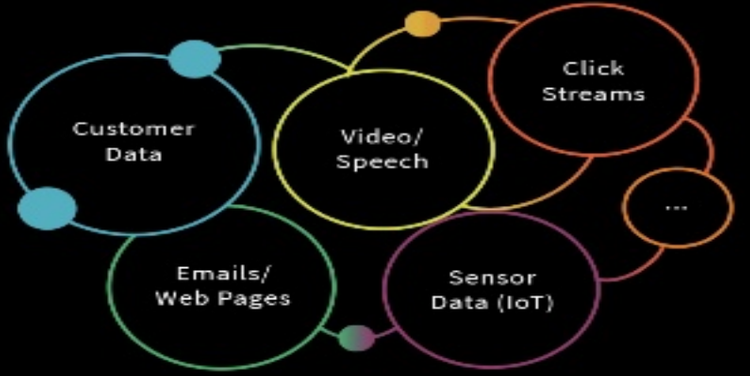
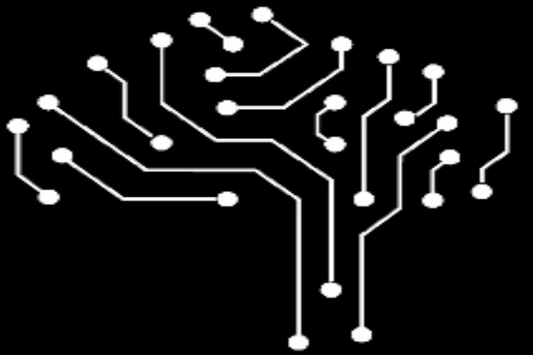
Data is not ready for AI



Data Lake

Inconsistent Data
Lack of Schema
Slow Performance and Costly



AI

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Databricks Delta

Brings data reliability and performance to data lakes

Data Reliability + **Fast Analytics**

Parquet · hadoop · kafka · Azure Blob Storage · S3

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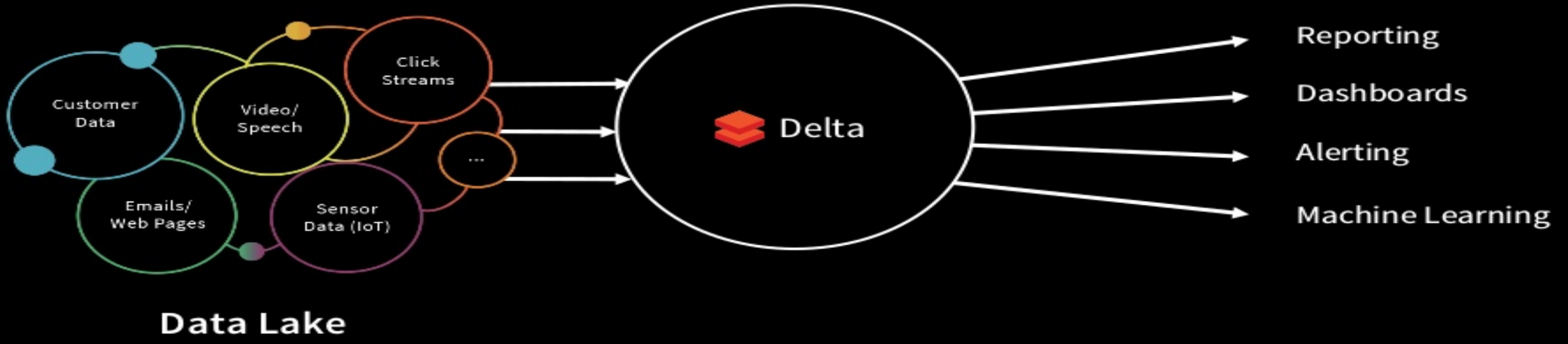
Databricks Delta: makes data ready for AI

Data Reliability

Schema Enforcement
ACID Transactions

Query Performance

Very Fast at Scale
Indexing (10-100x Faster)



Data Lake

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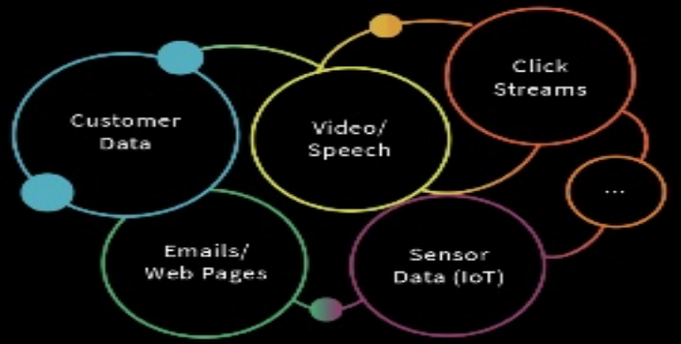
2 Data and AI technology silos

Data & AI technology silos

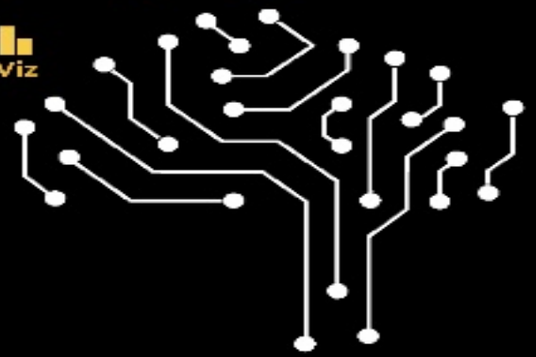


hadoop mongoDB. Java Scala
C++ ORACLE kafka TERADATA

Great for Data, but not AI

Supporting and Deployment Libraries

mleap TFServing TensorBoard SciPy
matplotlib R ANACONDA. NumPy
Pandas PyViz Azure ML



python Keras mxnet PYTORCH
TensorFlow learn H_2O.ai

Great for AI, but not for data

Data & AI technology silos

Supporting and Deployment Libraries

Databricks Runtime for ML

Ready to use clusters with built-in ML Frameworks

TensorFlow™ · scikit-learn · Keras · XGBoost · PYTORCH · Horovod · NumPy

GPU support

Azure · aws

Great for Data, but not AI

Great for AI, but not for data

3 Data scientists and engineers are in silos

Data scientists & engineers are in silos

1. **Data Prep**
   Hard to make pipelines reliable

   Apache Spark

2. **Build Model**
   Challenging to track and reproduce experiments

   GitHub CONDA TensorFlow Excel learn XGBoost

3. **Deploy Model**
   Have to ensure reliability, SLAs, and quality

   kubernetes docker

Data Engineers

Data Scientists

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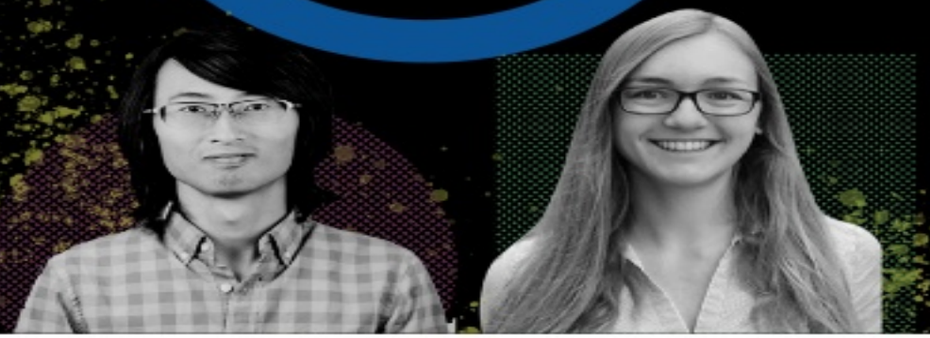
Databricks MLflow: unifies data scientists & engineers

Data Engineers



Data Scientists

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Databricks MLflow: unifies data scientists & engineers

1 **Data Prep**

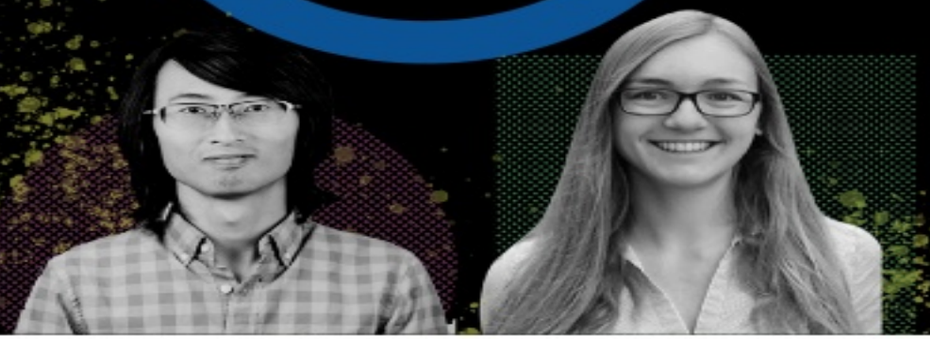
Build reliable data pipelines
Track the datasets
Databricks Delta

3 **Deploy Model**

Deploy models in production, track their quality
MLflow Serving

2 **Build Model**

Track Experiments
Reproduce experiments
MLflow Project & Tracker
Databricks Runtime for ML



Data Engineers

Data Scientists

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Databricks MLflow: unifies data scientists & engineers

1 Data Prep

Build reliable data pipelines

Track the datasets

Databricks Delta

2 Build Model

Track Experiments

Reproduce experiments

Databricks Runtime for ML

MLflow Project & Tracker

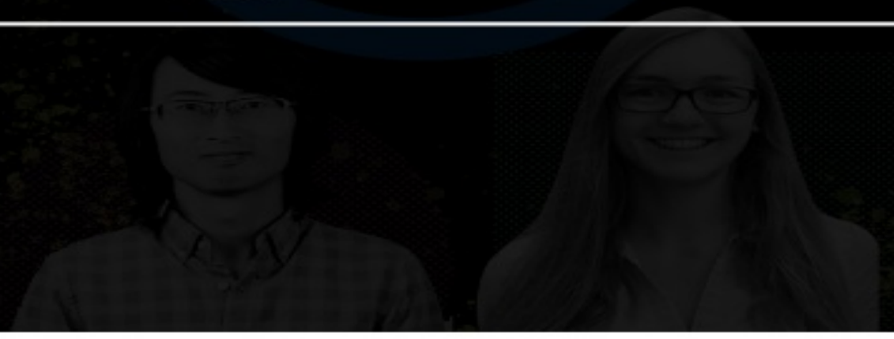
3 Deploy Model

Deploy models in production, track their quality

MLflow Serving

Announcing: **time travel**

Delta + mlflow



Data Engineers

Data Scientists

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REGENERON


Hotels.com™

Databricks makes AI possible

for the other 99% by

unifying data science and engineering


Databricks Unified Analyitcs
demo by Michael Armbrust
databricks