

Ready to takeoff? It's time to **Let your AI run**

[mrxrunway.ai](https://mrxrunway.ai)

# From Jupyter to MLOps:

Jupyter as a key integrator for MLOps

Sangwoo Shim

Co-founder and CTO at MakinaRocks

MakinaRocks

# MakinaRocks

We accelerate and scale AI adoption in the industrial sectors with our enterprise ML platform and solutions.

## AI Products

Enterprise MLOps Platform



## AI Solutions

Anomaly Detection, Control Optimization and Predictive Analysis



# 95+

Members in Korea and Silicon Valley

# \$25M+

Raised from prestigious investors

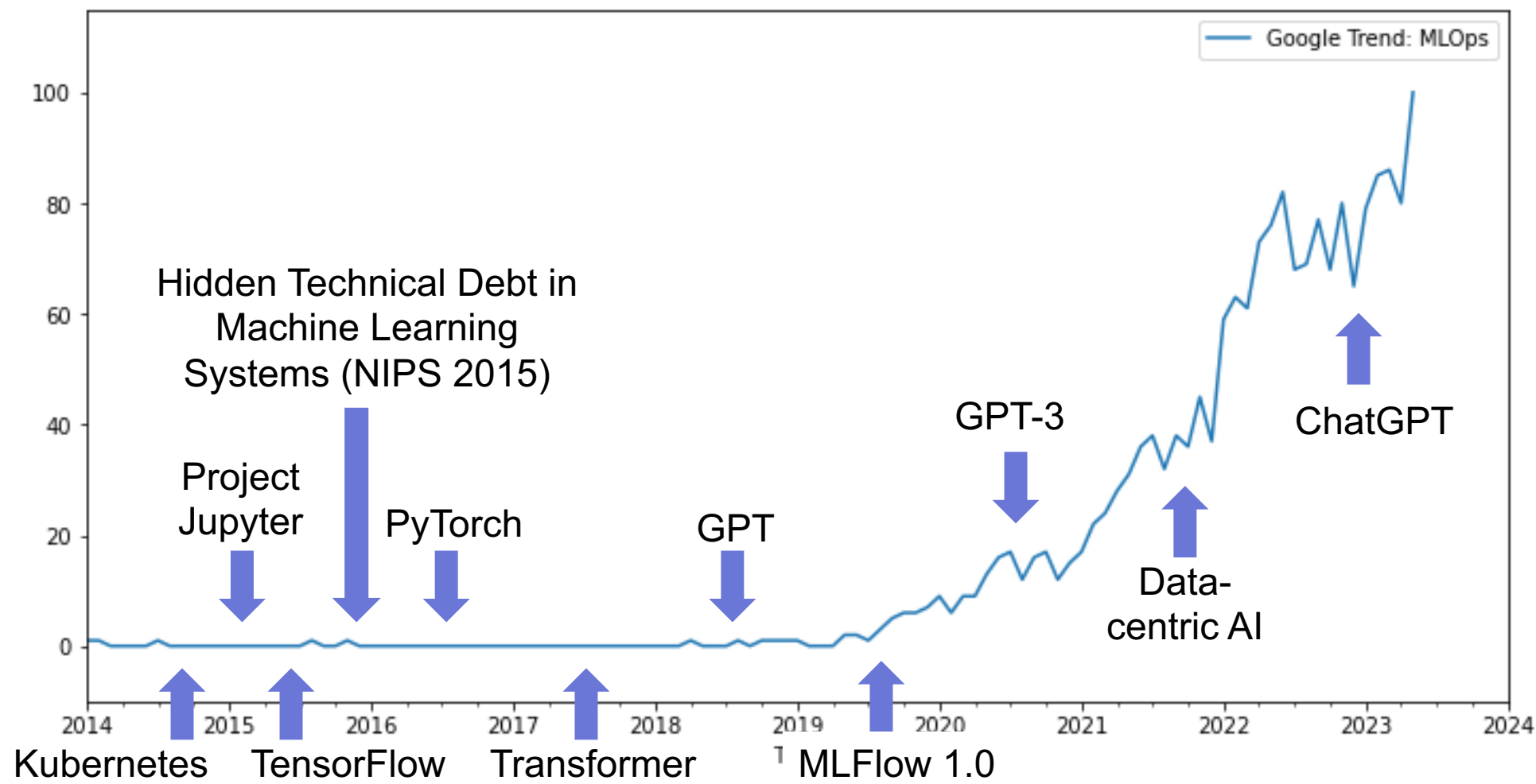


'22 Advanced Manufacturing 50  
By CB Insights



'21 Technology Pioneers  
By World Economic Forum

# MLOps Trend



# MakinaRocks

SEMICON EQUIPMENT  
TIME-TO-FAILURE

ROBOT ARM  
ANOMALY DETECTION

POLYMER REACTOR  
SHUTDOWN ANALYSIS

MICROBIAL PROCESS  
AUTOPILOT

RL-BASED ENERGY  
MGMT SYSTEM CONTROL

MULTI-ROBOT TASK &  
MOTION PLANNING

SOLAR POWER  
GENERATION PREDICTION

CO<sub>2</sub> LASER DRILL  
ANOMALY DETECTION

Li+ BATTERY ESS  
ANOMALY DETECTION

CHIP PLACEMENT  
WITH RL

EV Li+ BATTERY  
RUL PREDICTION

SMT MOUNTING  
SEQUENCE OPTIMIZATION

# Our Focus

1. Liason between data scientists and MLOps engineers
2. Model Observability
3. Various model deployment strategies
4. Performance monitoring
5. Interoperability

# Outline

1.Data Scientists in MLOps: Role and Challenges

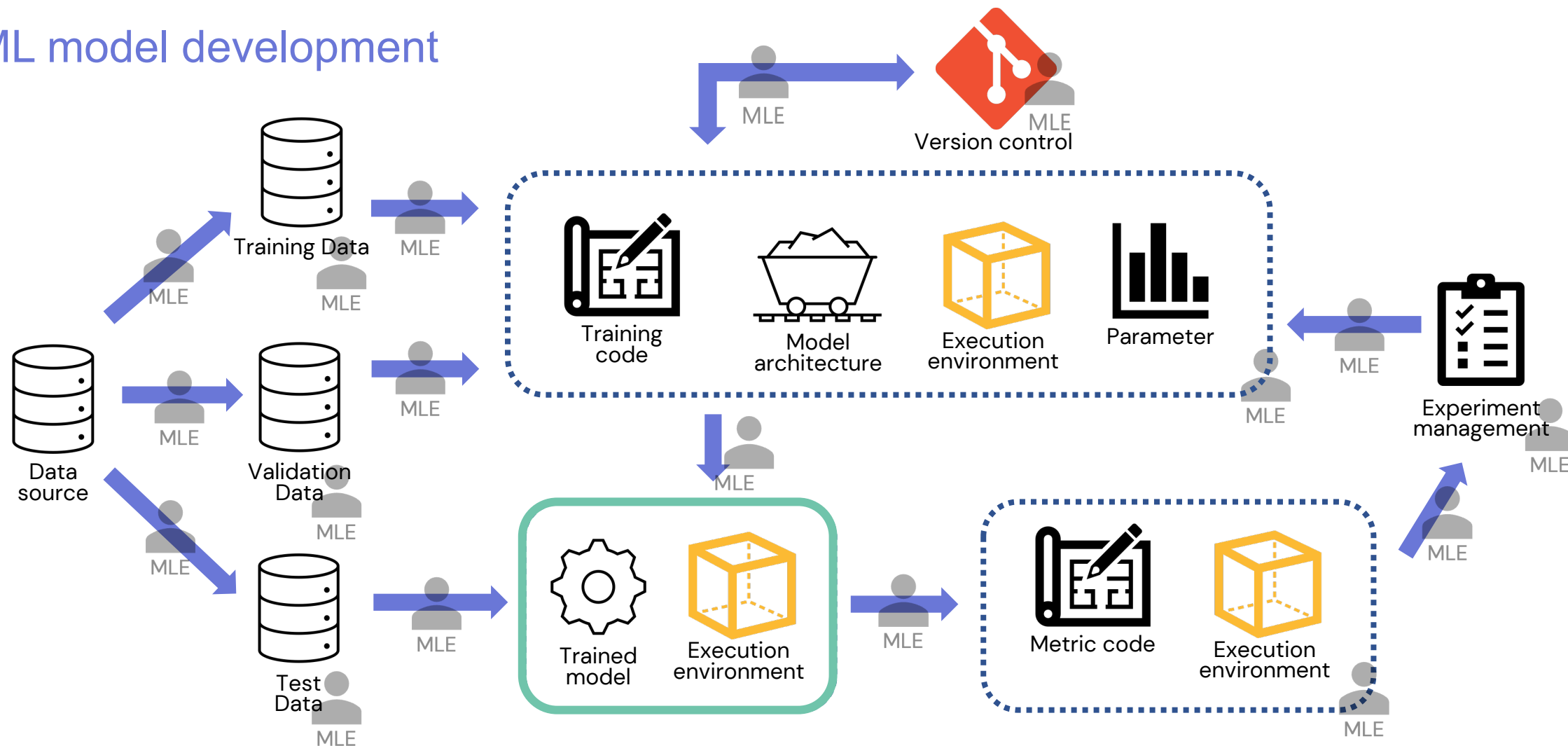
2.MakinaRocks Link: Streamlining MLOps Pipelines Creation

3.MakinaRocks Runway: Managing Models at Scale

4.Looking Ahead: The Future of MLOps

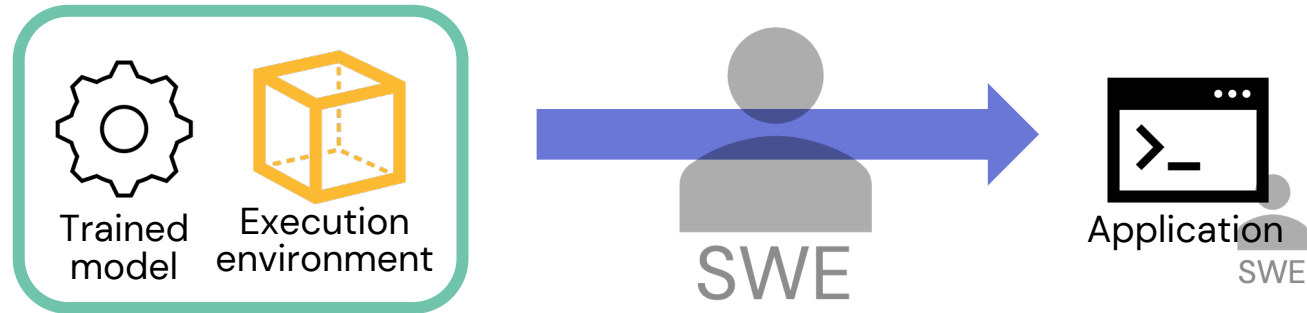
# Machine Learning Operations

## ML model development



# Machine Learning Operations

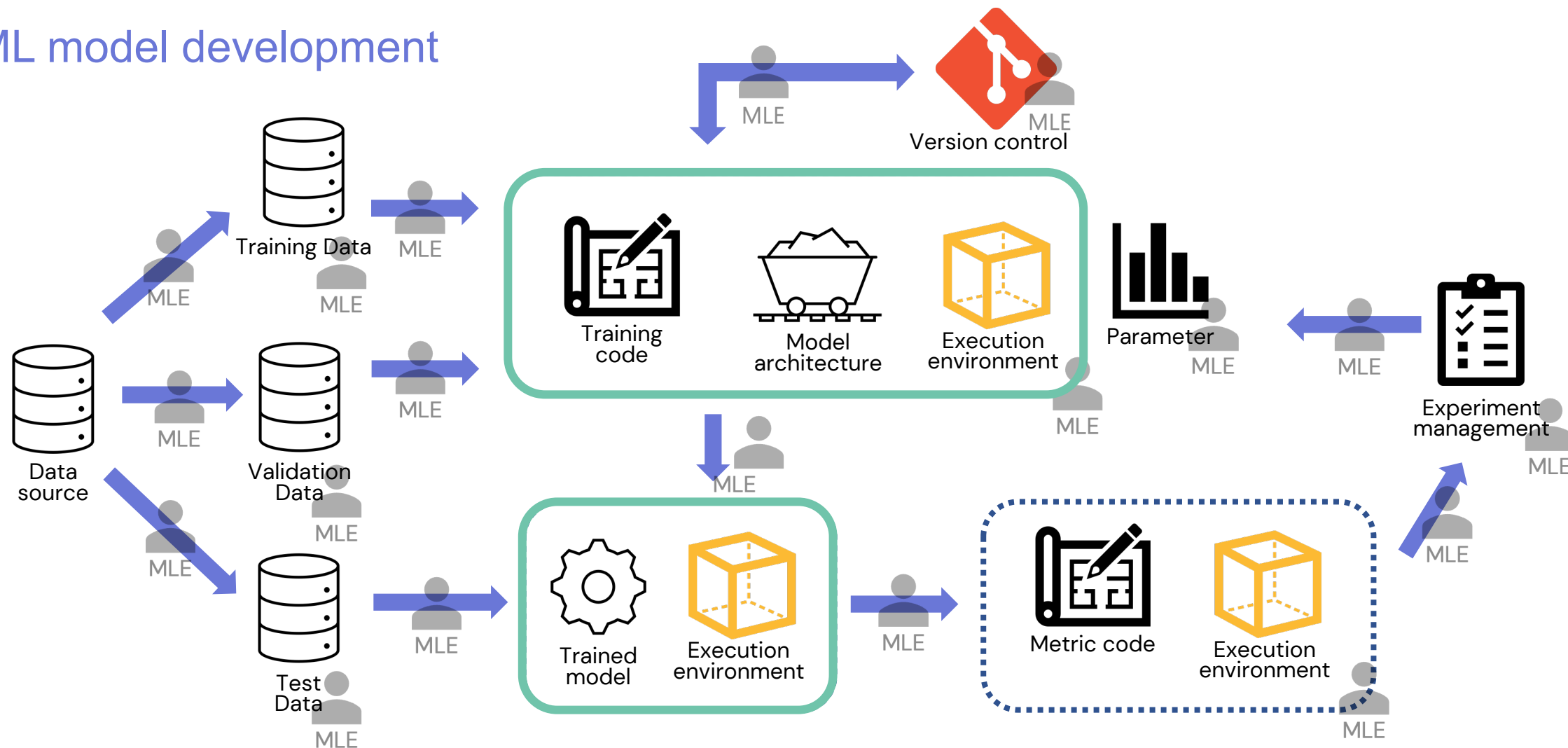
Traditional approach





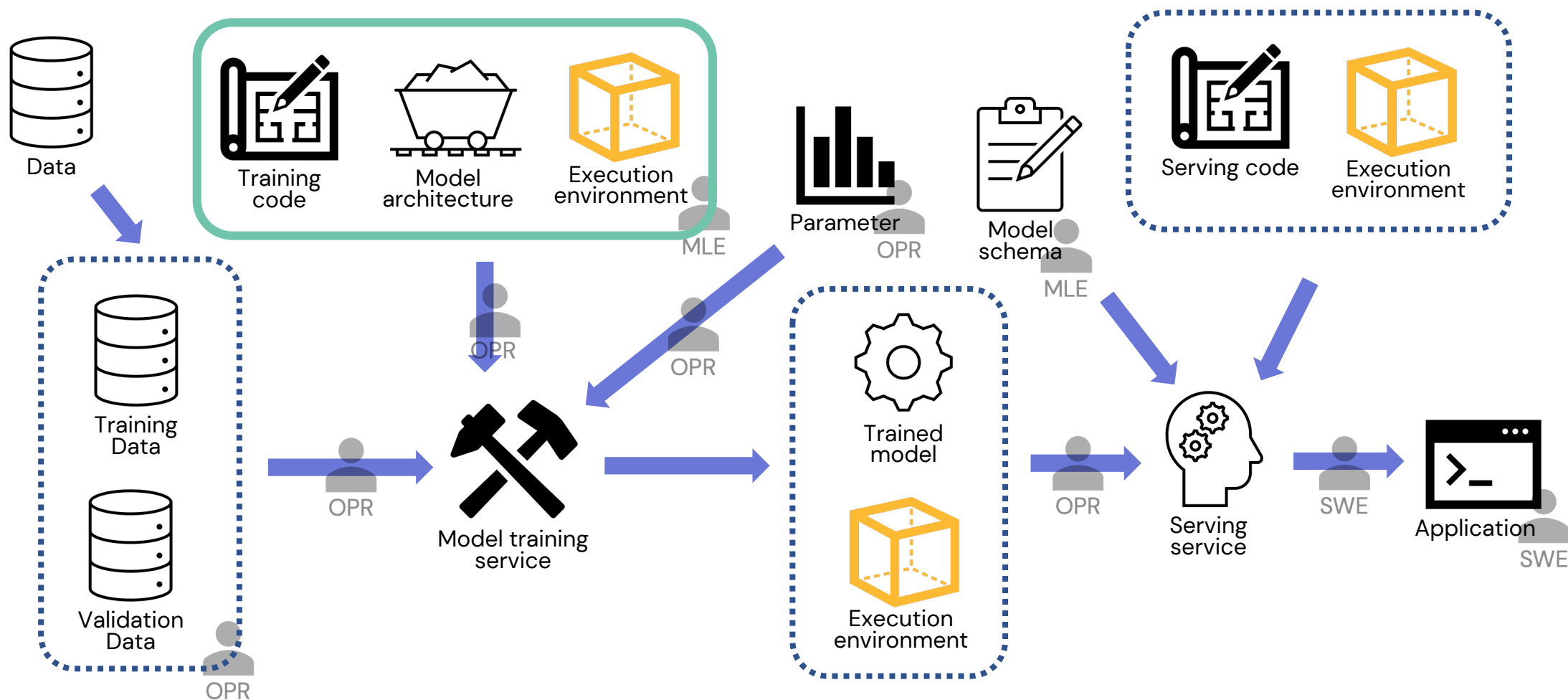
# Machine Learning Operations

## ML model development



# Machine Learning Operations

## MLOps approach



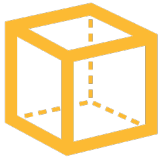
# More Burdens for Data Scientists



Training  
code



Parameter



Execution  
environment



Model  
architecture

## Pipelines

- Argo Workflow
- Airflow/papermill
- Kubeflow
- Luigi



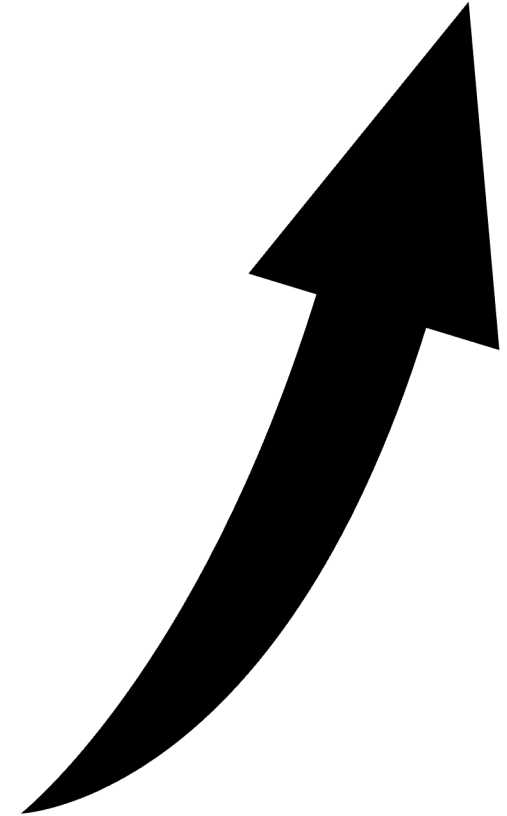
## Container

- Docker
- Kubernetes



## Python

- Jupyter!
- Scikit-Learn
- Xgboost
- Tensorflow
- Pytorch



# Outline

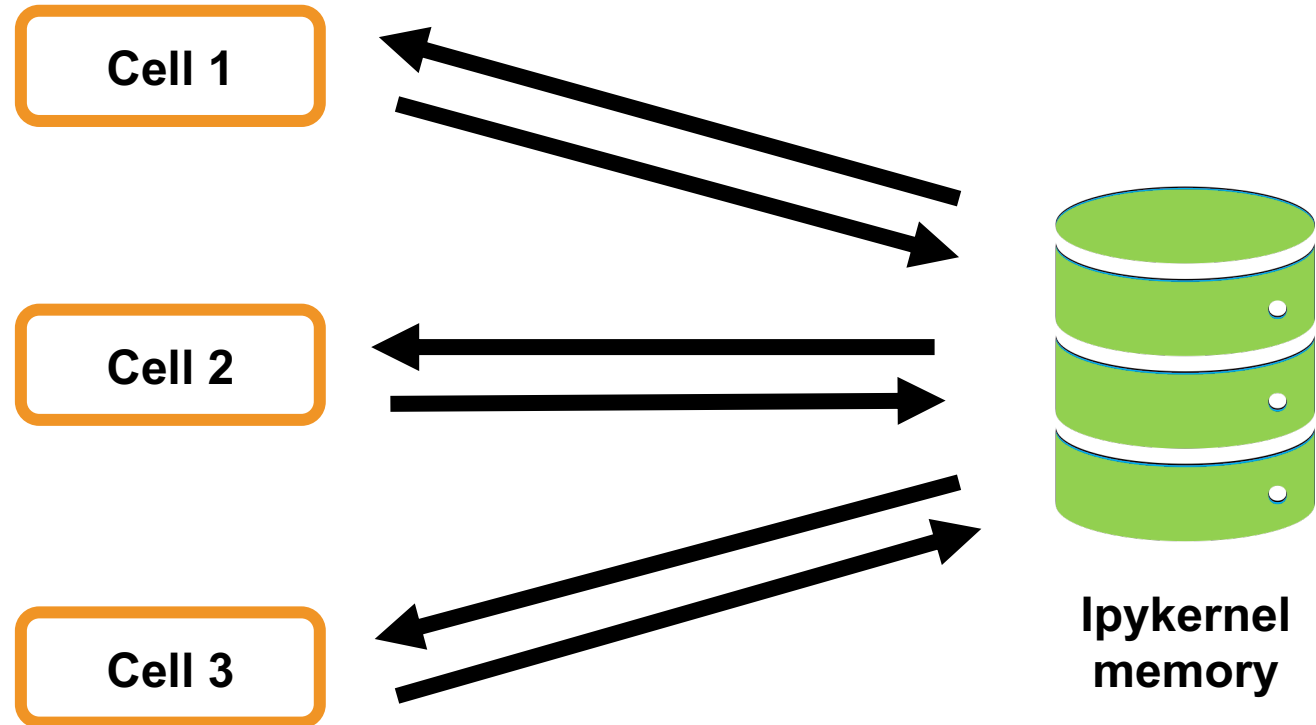
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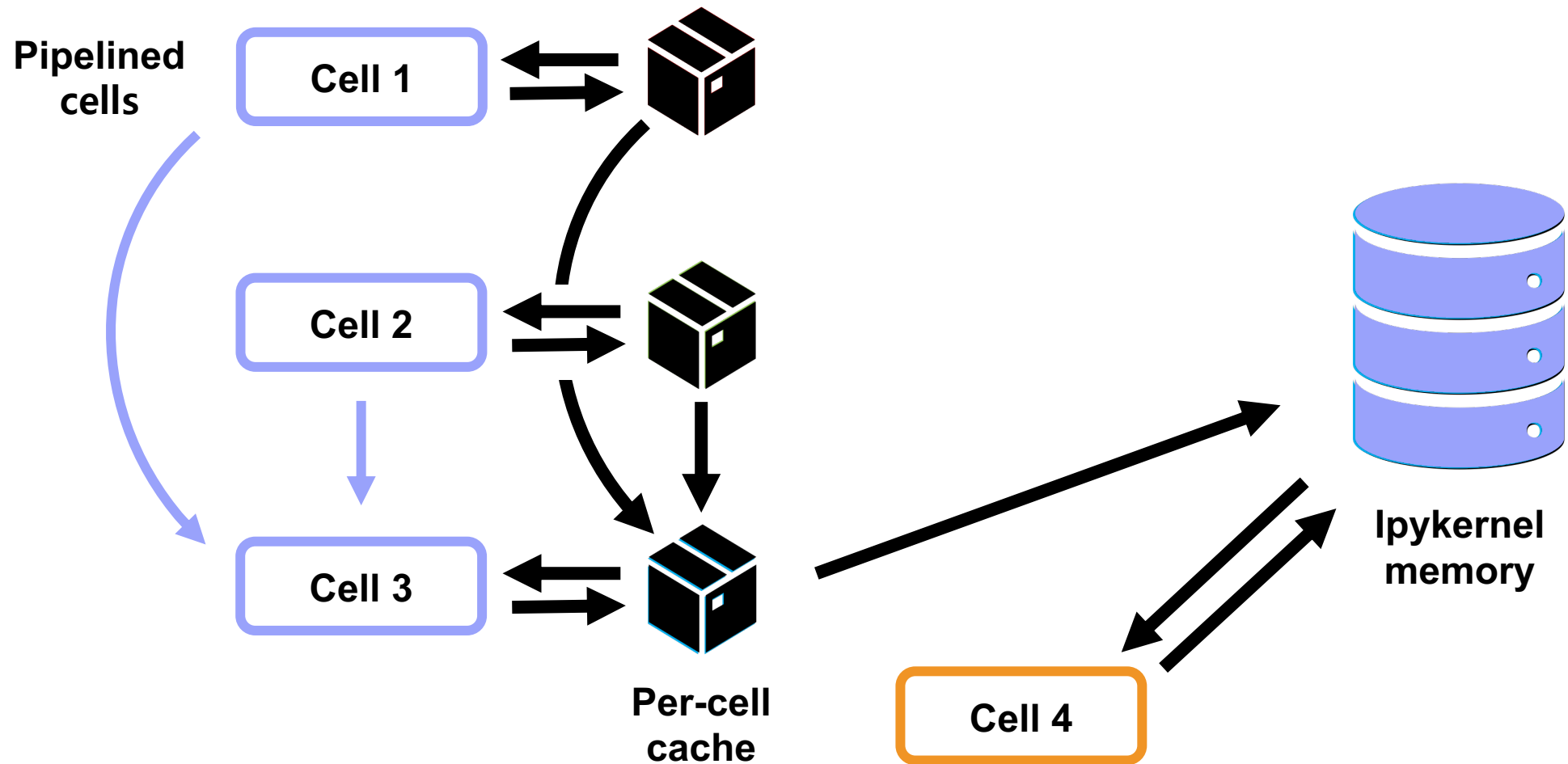
# Execution in Jupyter Notebook



# Execution in Jupyter Notebook



# Execution in MakinaRocks Link

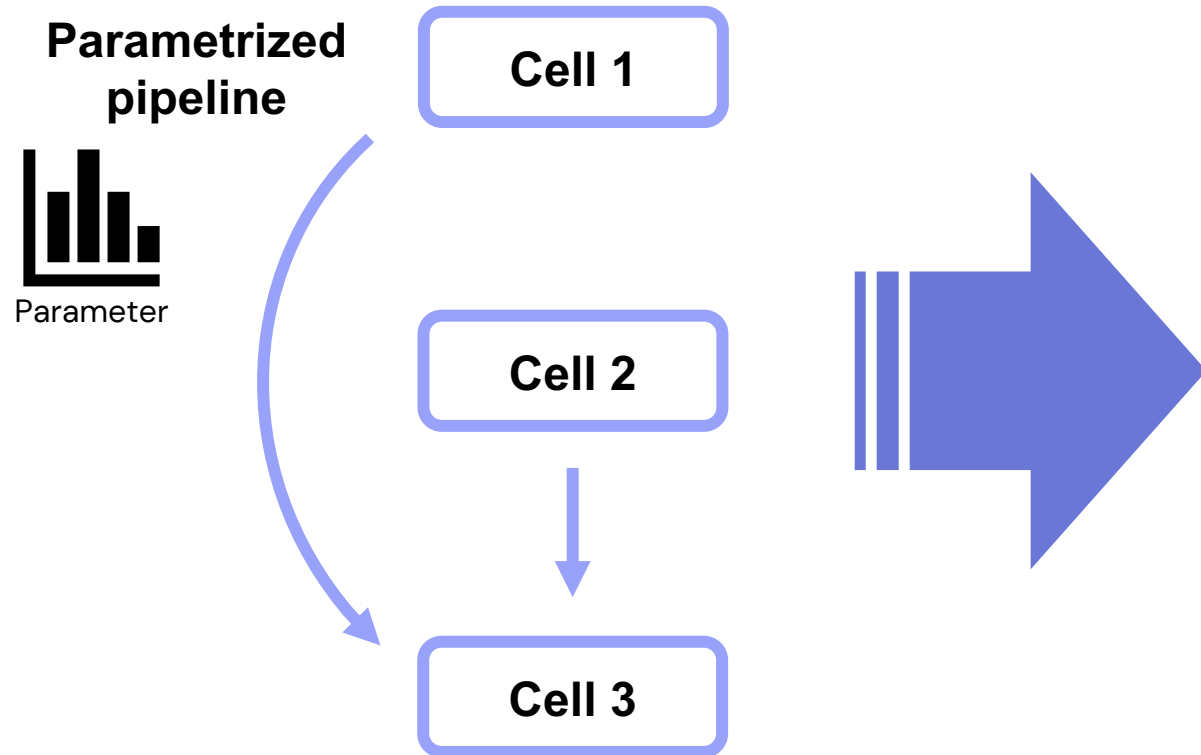


# Execution in MakinaRocks Link





# Execution in MakinaRocks Link



- Argo Workflow
- Link Runtime
- Any other DAG-based pipeline runners

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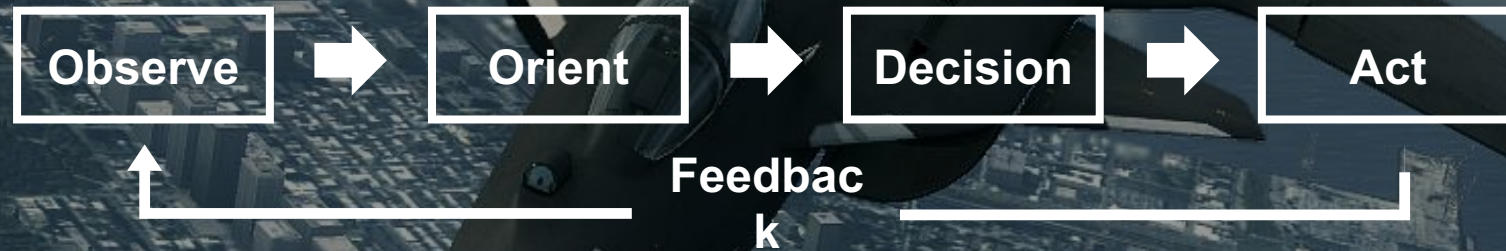
# MakinaRocks Runway

1. Data source and Dataset management
2. Pipeline creation (with Link)
3. Export pipeline to runway
4. Deploy registered model

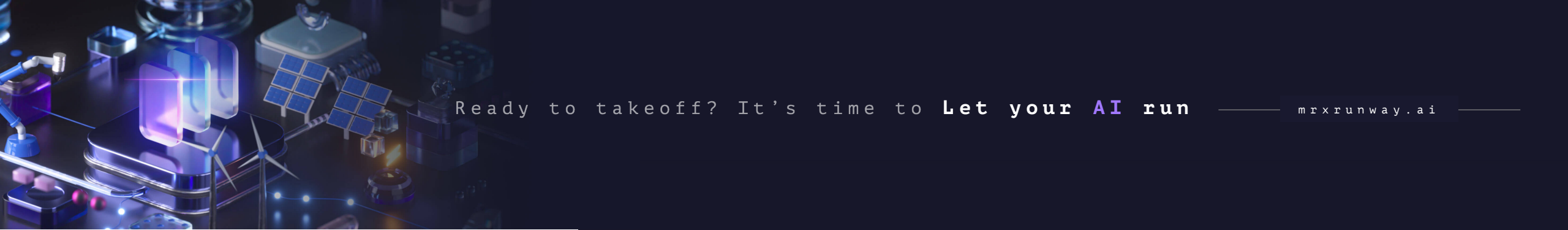
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# Boyd's Law of Iteration: Speed of iteration beats Quality of iteration

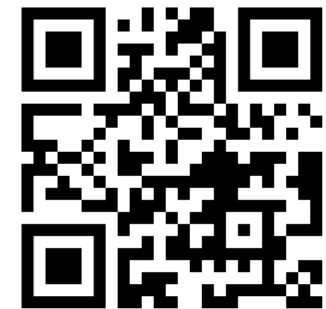
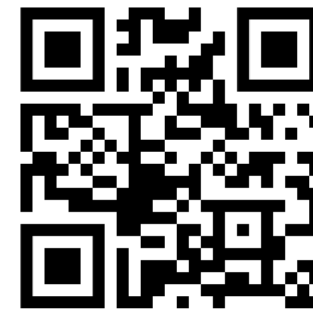
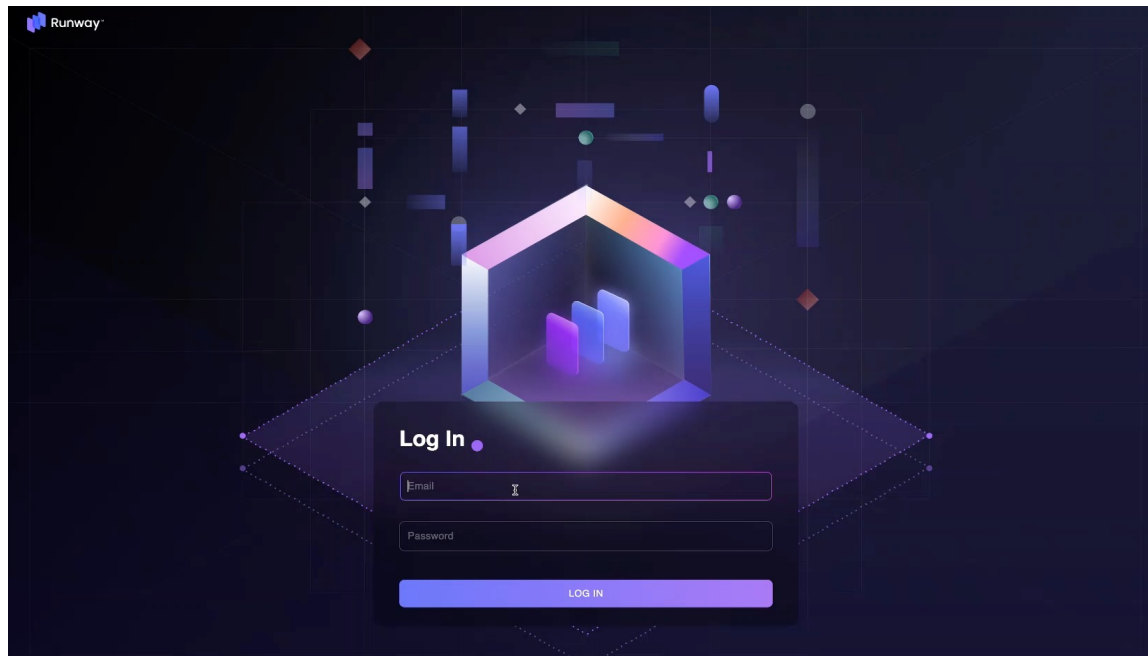






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[contact@makinarocks.ai](mailto:contact@makinarocks.ai)