

How we use Kubeflow in Industrial applications

葉信和 / Hsin-Ho Yeh
Software Engineer / CEO @ 信誠金融科技
hsinho.yeh@footprint-ai.com

Agenda

- One-click installation with Multikf
- Building a development platform with Kubeflow
- Real-time model inferencing with kubeflow

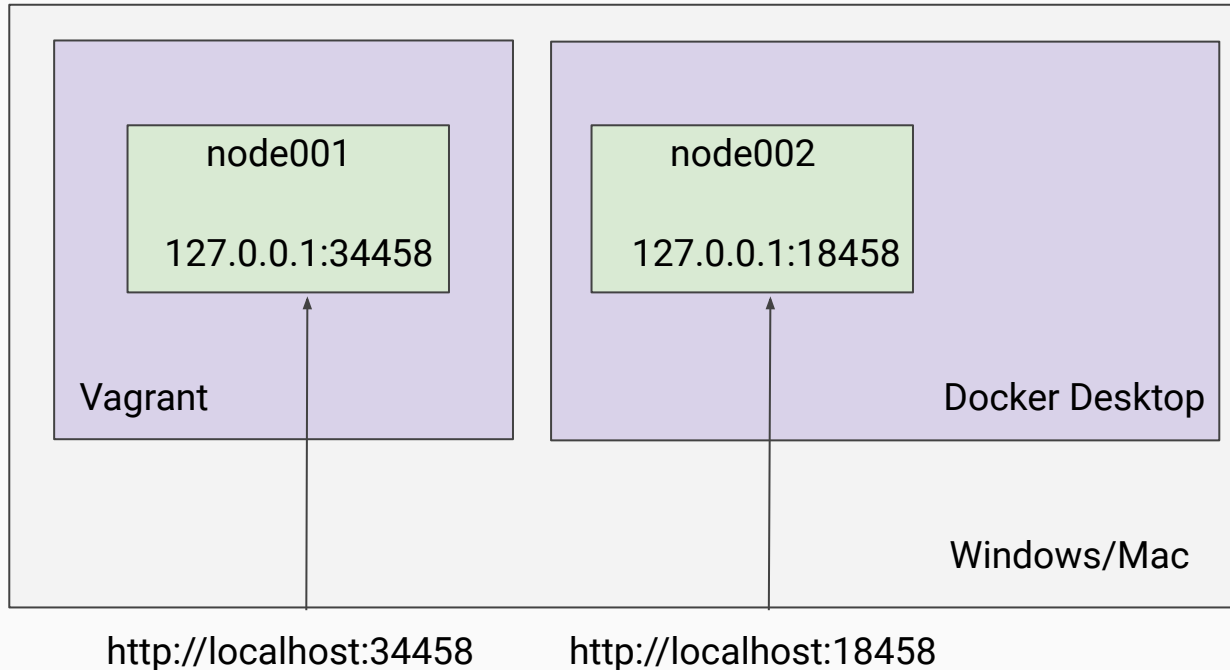
Multikf(馬地庫夫)

<https://github.com/footprintai/multikf>

Our open-source project for one-clicked running multiple Kubeflow instances within the single host machine.

multikf: One-click Installation

- Multikf: <https://github.com/footprintai/multikf>



multikf: One-click Installation

```
// Prerequisite: install dockerd (windows)
https://github.com/FootprintAI/kubeflow-workshop/blob/main/install/windows/dockerd.bat.md

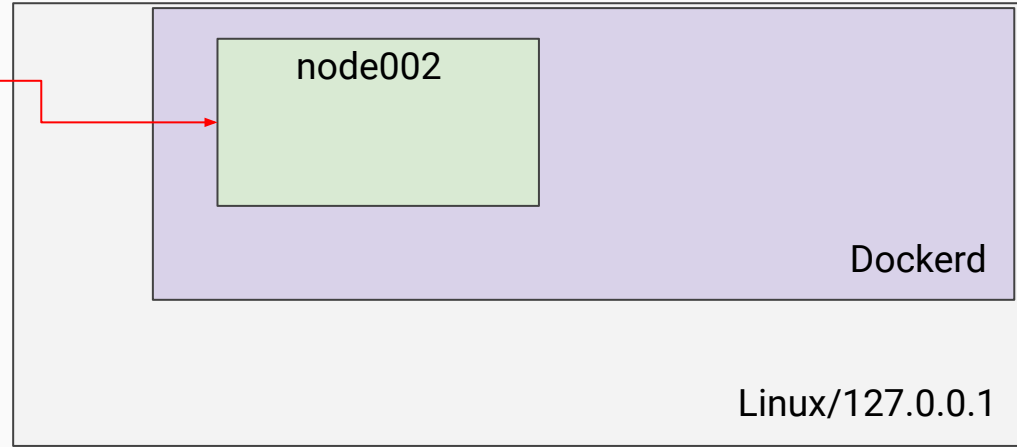
// for windows user
// install multikf
wget https://github.com/FootprintAI/multikf/raw/main/build/multikf.windows.exe
chmod +x multikf.windows.exe

// add an instances
./multikf.windows.exe add node002

// connect kubeflow
./multikf.windows.exe connect kubeflow node002
>> now you can open http://localhost:38541
```

Multikf: how it works (1/3)

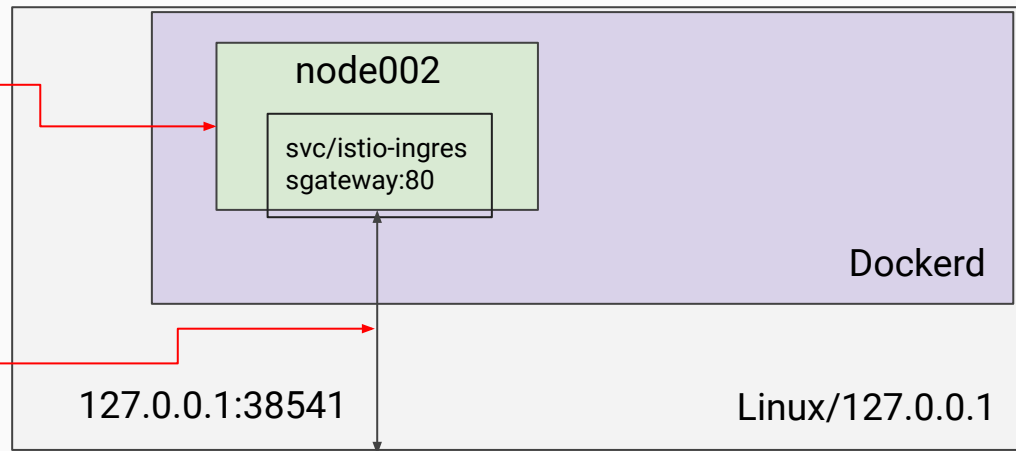
1. multikf.linux add node002



Multikf: how it works (2/3)

1. multikf.linux add node002

2. multikf.linux connect kubeflow node002
>> now you can open <http://localhost:38541>

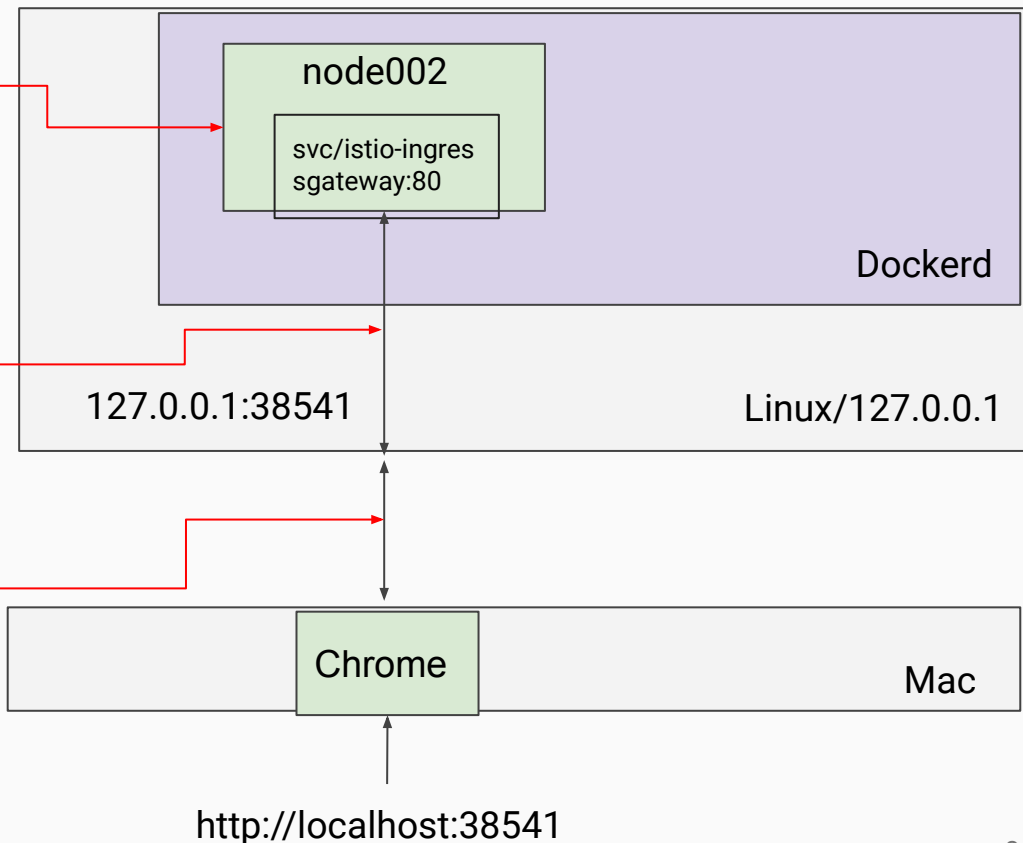


Multikf: how it works (3/3)

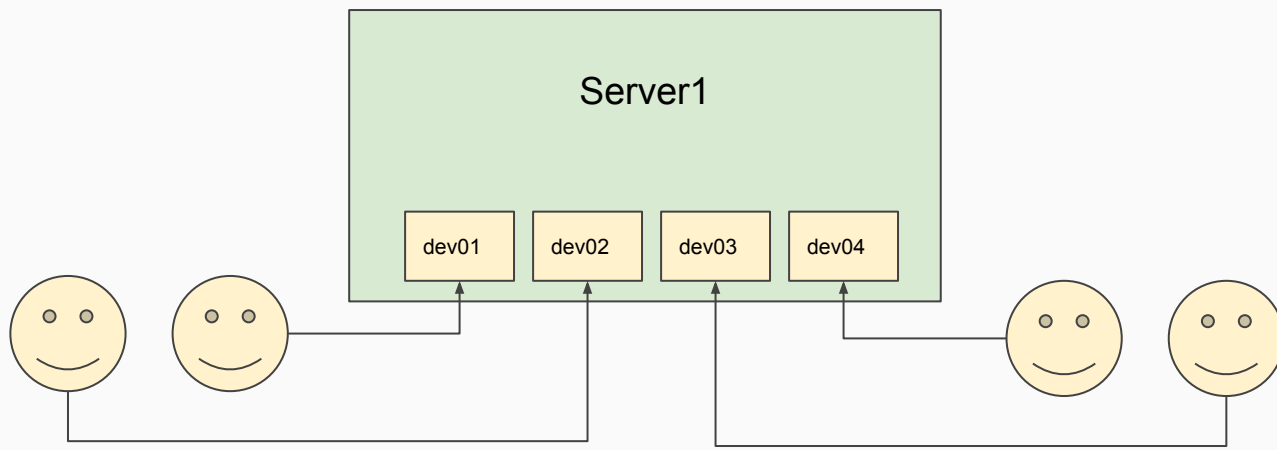
1. multikf.linux add node002

2. multikf.linux connect kubeflow node002
>> now you can open <http://localhost:38541>

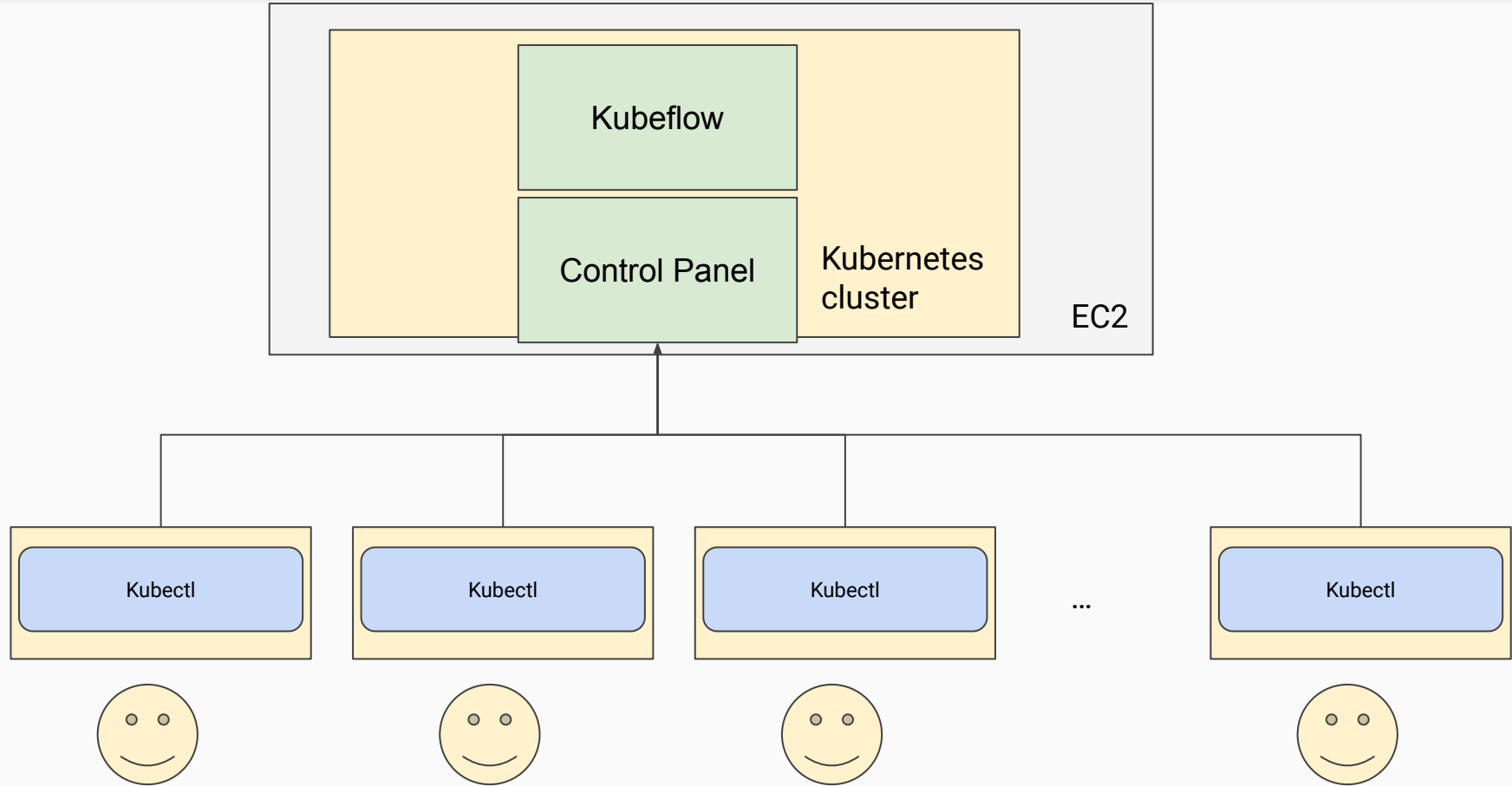
3.(optional) `ssh -L 38541:localhost:38541 \`
`-i <your-private-key> ubuntu@1.2.3.4`



- Minimize knowledge on installation and debugging
 - All the lifting is picked up by the tooling.
 - Saved more times and easily for troubleshooting.
- Customizable resources allocated
 - Allows customization on resources used per environment per project with kustomize.
- Thin-client model



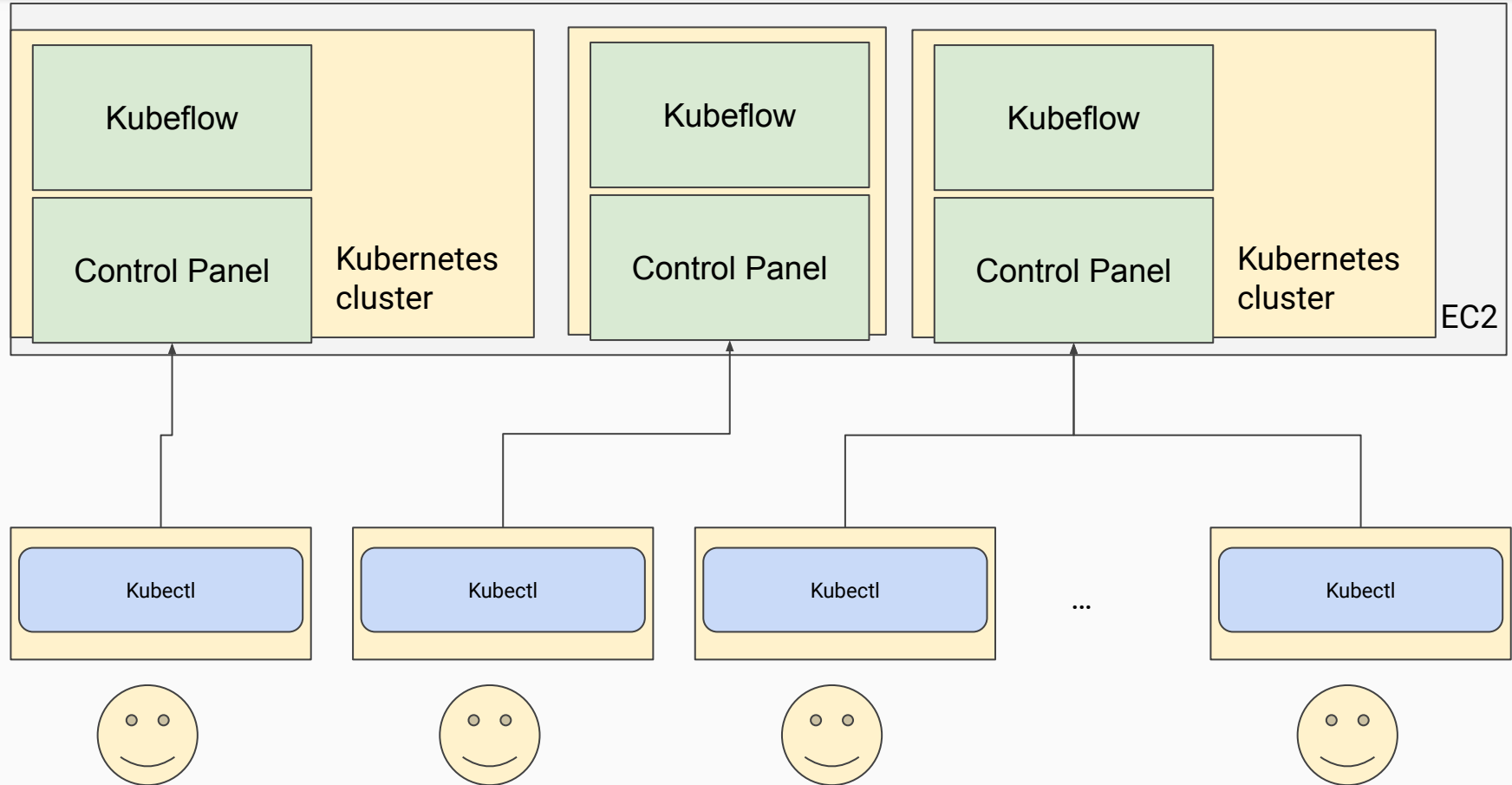
Centralized Development Model (1/2)



Centralized Development Model (2/2)

- Cons:
 - Longer debugging cycle
 - containerized -> transferred to registry -> downloaded and deploy to k8s cluster
 - Broken upstream
 - Someone updated a new version on dev environment and just got crashed.
 - Confliction between users
 - User A deleted dummy resources that he/she think it might not use anymore.
 - User B relies on that dummy resources for debugging...

Decentralized Development Model (1/2)



Decentralized Development Model (2/2)

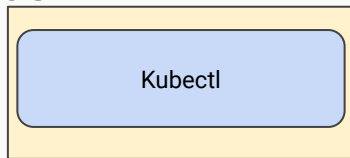
Decentralized Development Model:

- Customized configuration with kustomize.
- Cons:

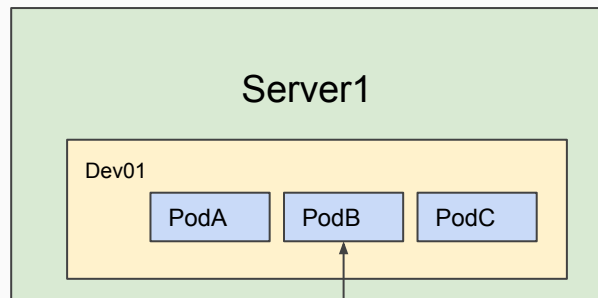
- Longer debugging cycle
 - Build Optimization [\[link\]](#)
 - Require port-forward from your machine to the destination

service

- ~~Broken upstream~~
- ~~Conflict between users~~



```
from [::1]:17443 -> 443
from 127.0.0.1:5432 -> 5432
from [::1]:5432 -> 5432
16:43:02 portforward.pool: create a new conn
16:43:02 new forwarder conn, req:grandturks/minio-service/[19001:9001 9000:9000]
16:43:03 portforward: haven't start yet, forwarding now
from 127.0.0.1:19001 -> 9001
from [::1]:19001 -> 9001
from 127.0.0.1:9000 -> 9000
from [::1]:9000 -> 9000
```



127.0.0.1:5432:5432

Tintin: Machine learning platform for Everyone

<https://github.com/FootprintAI/tintin-templates>

On top of Kubeflow, we built a machine learning development platform for easing the gap in using Kubeflow and Kubernetes.

≡ 深度學習訓練開發平台

Search...



PROJECTS / demo-tensorflow2 / OVERVIEW



OVERVIEW

ASSETS

DEVELOPMENT

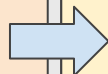
JOBS

MONITORING

ACCESSCONTROL

Data Preparation:

- Versioning
- Immutability
- S3-like interface



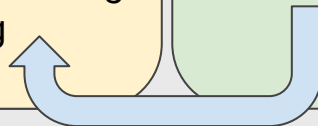
Model Development:

- Python environment
- ML Framework agnostic
- Background Running
- Model Tuning



Model Operation:

- Model Deployment
- Monitoring & Logging
- Horizontal Scale



< PREVIOUS

NEXT >

Monitoring



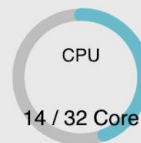
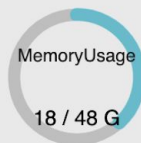
Verification

demo-tensorflow2

歡迎您!

深度學習訓練開發平台!

User Resource Overview



Projects

+ New Project



英文語音識別

by user2@footprint-ai.com

最後編輯時間2021/1/26 14:59:31



Cifar-10 影像辨識

by user2@footprint-ai.com

最後編輯時間2021/1/18 15:52:02



Tintin: Machine learning platform for everyone (3/5)

深度學習訓練開發平台

PROJECTS / Cifar-10 影像辨識 / JOBS

Search...



Launch



Deploy



File



Help

4 selected



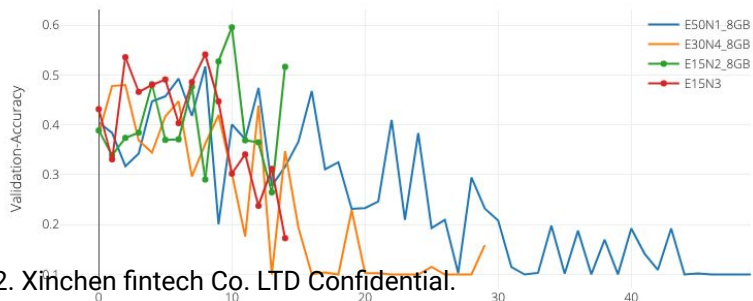
	Name	Job Status	Onlined	Duration	ScheduleAt	StartAt	EndAt	Metrics
✓	E50N1_8GB	✓		1:43:30	-	2021/1/13 24:36:39	2021/1/13 02:20:09	▼
✓	E30N4_8GB	✓		0:43:36	-	2021/1/13 24:26:46	2021/1/13 01:10:22	▼
✓	E15N2_8GB	✓		0:43:23	-	2021/1/12 23:03:29	2021/1/12 23:46:52	▼
✓	E15N3	✓		0:26:24	-	2021/1/12 22:56:24	2021/1/12 23:22:48	▼

Rows per page: 5 1-4 of 4

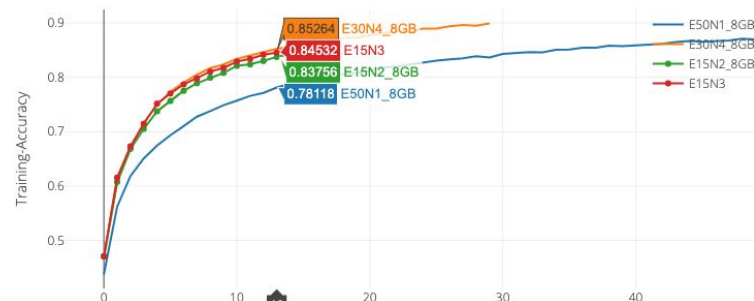
Comparison



Validation-Accuracy Comparison



Training-Accuracy Comparison



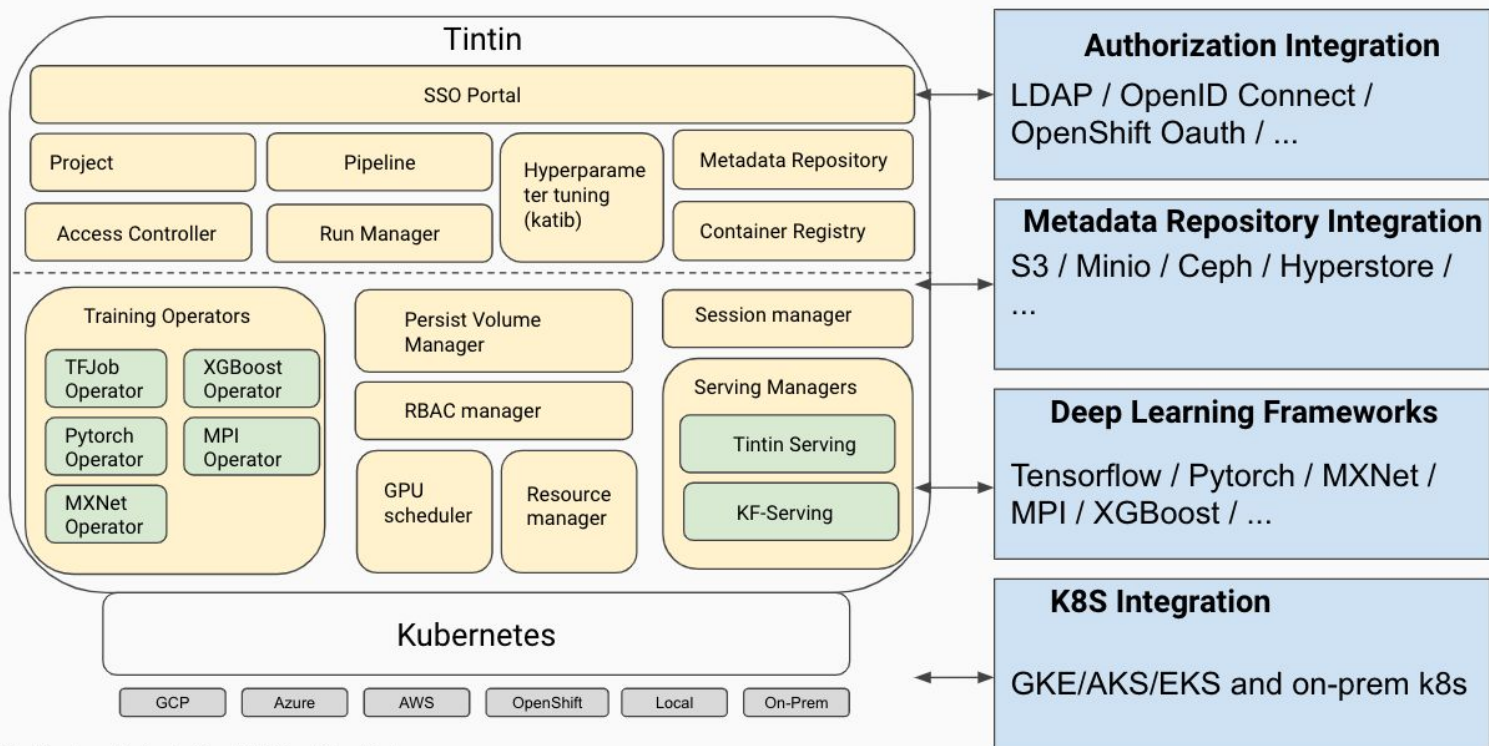
Default Run at Wed Dec 09 2020 14:42:37 GMT+0800 (Taipei Standard Time)

CURL:

UI:



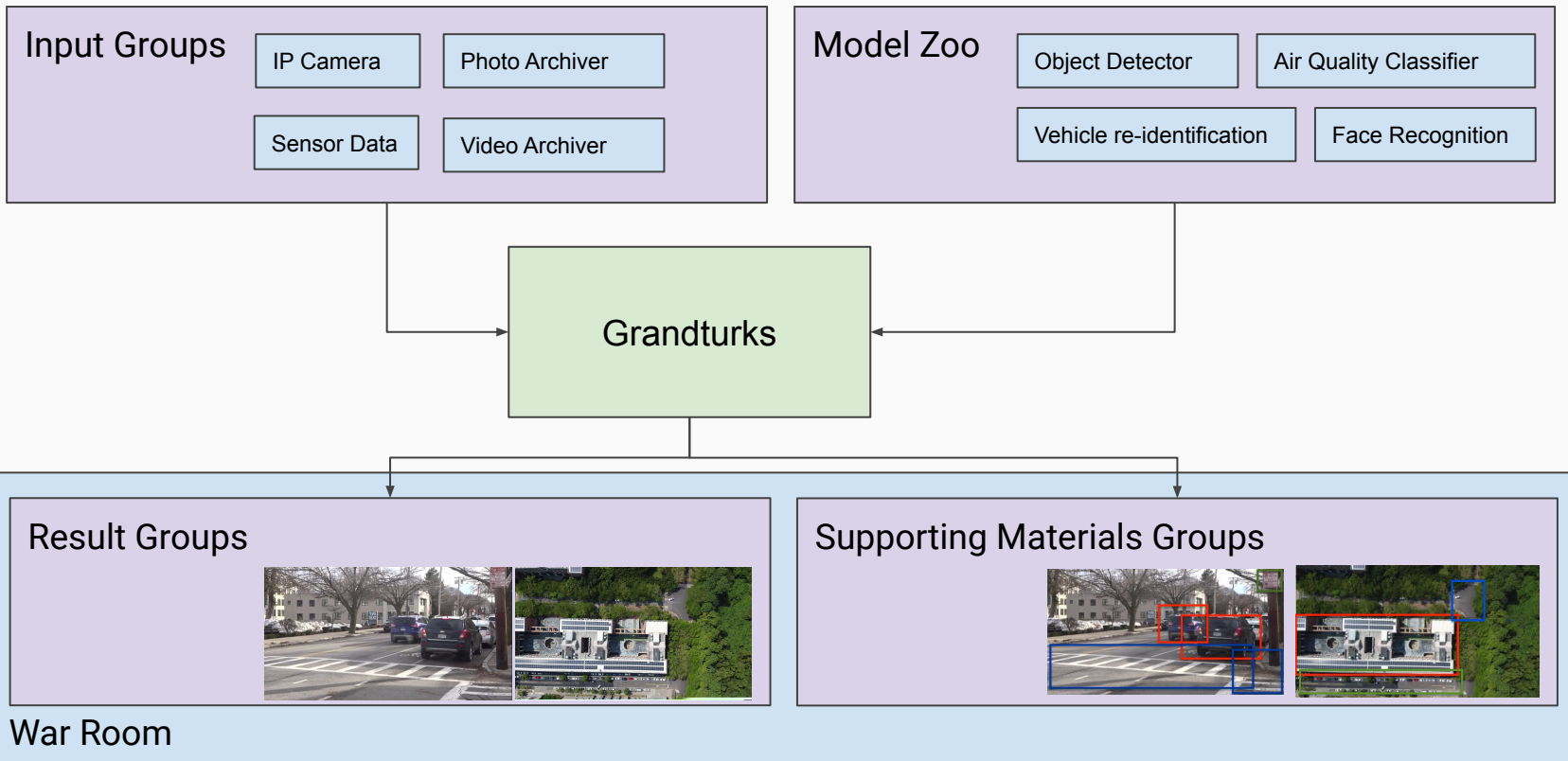
Empower EVERYONE to build and deploy model easily with Kubeflow and Kubernetes

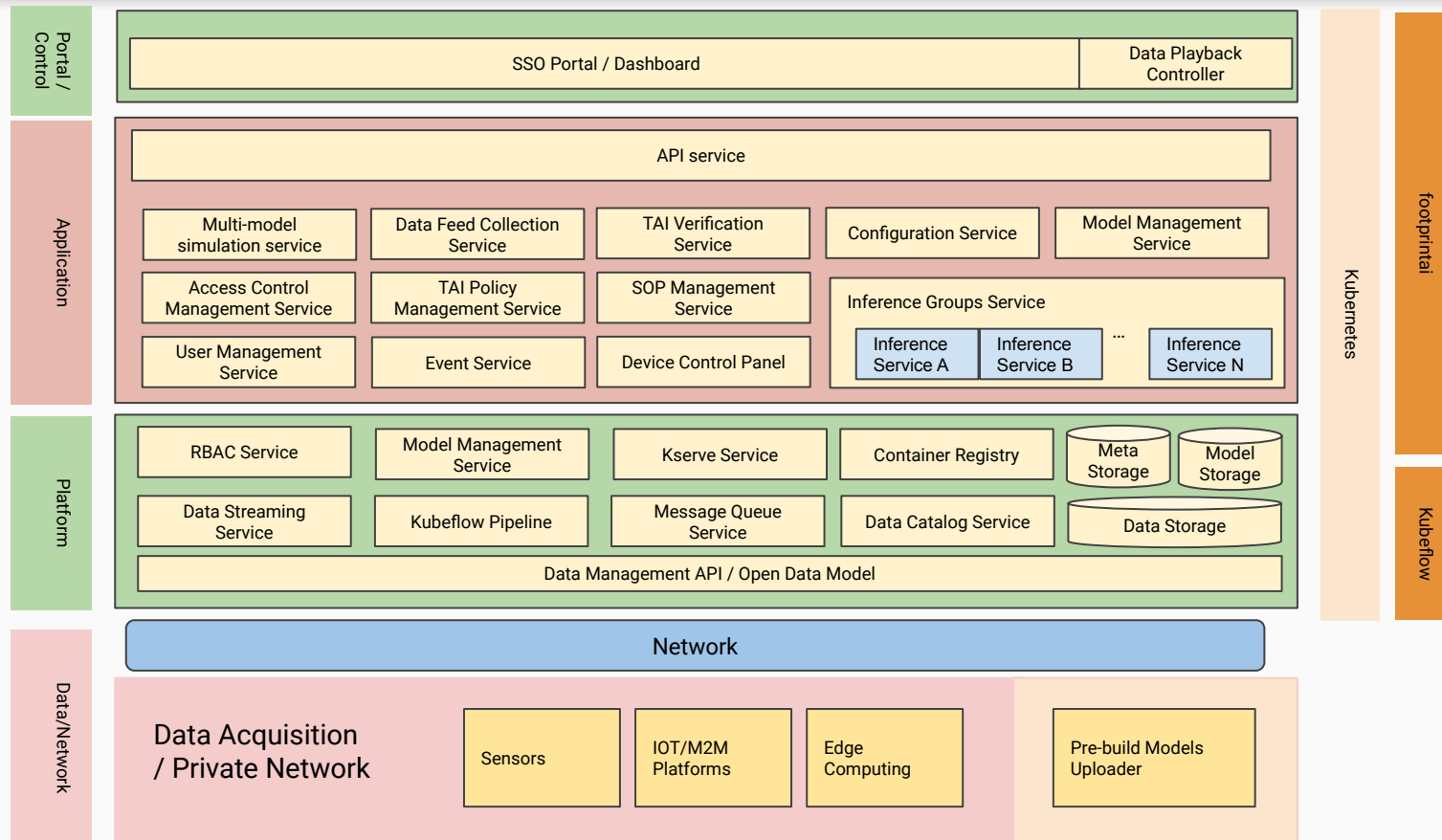


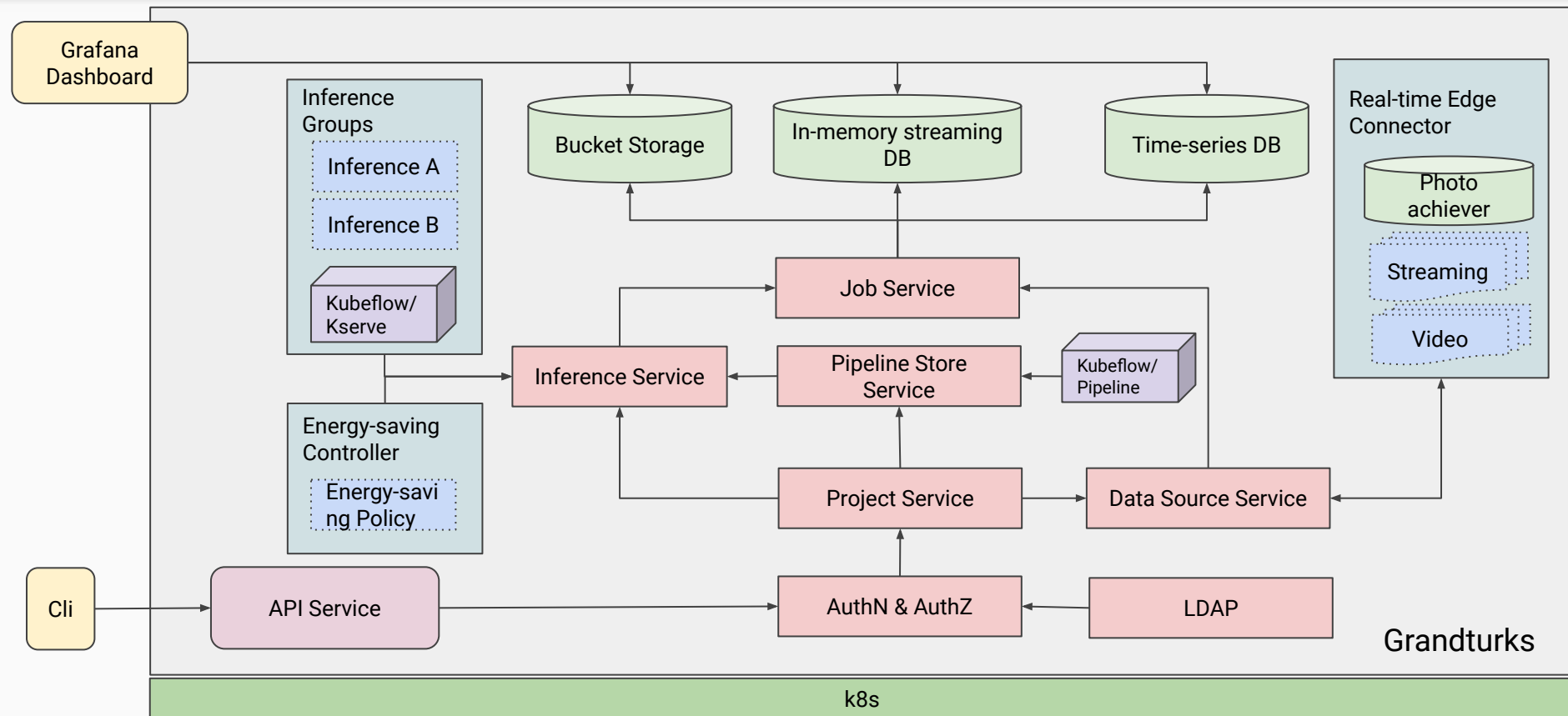
Grandturks: Realtime Multi-Datasource and Multi-model Inference

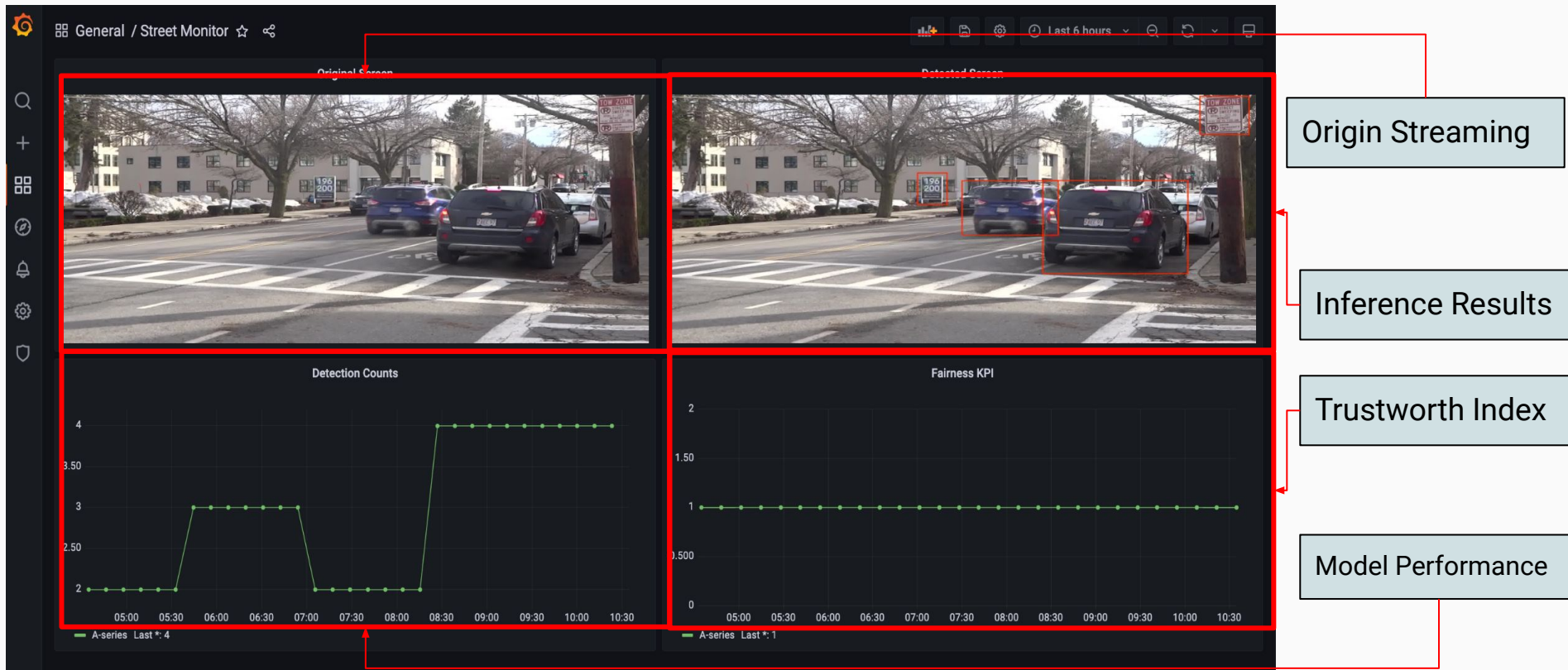
<https://github.com/footprintai/grandturks-client>

On top of Kubeflow, we built
a multi-model inference
engine for the ICCC
applications.

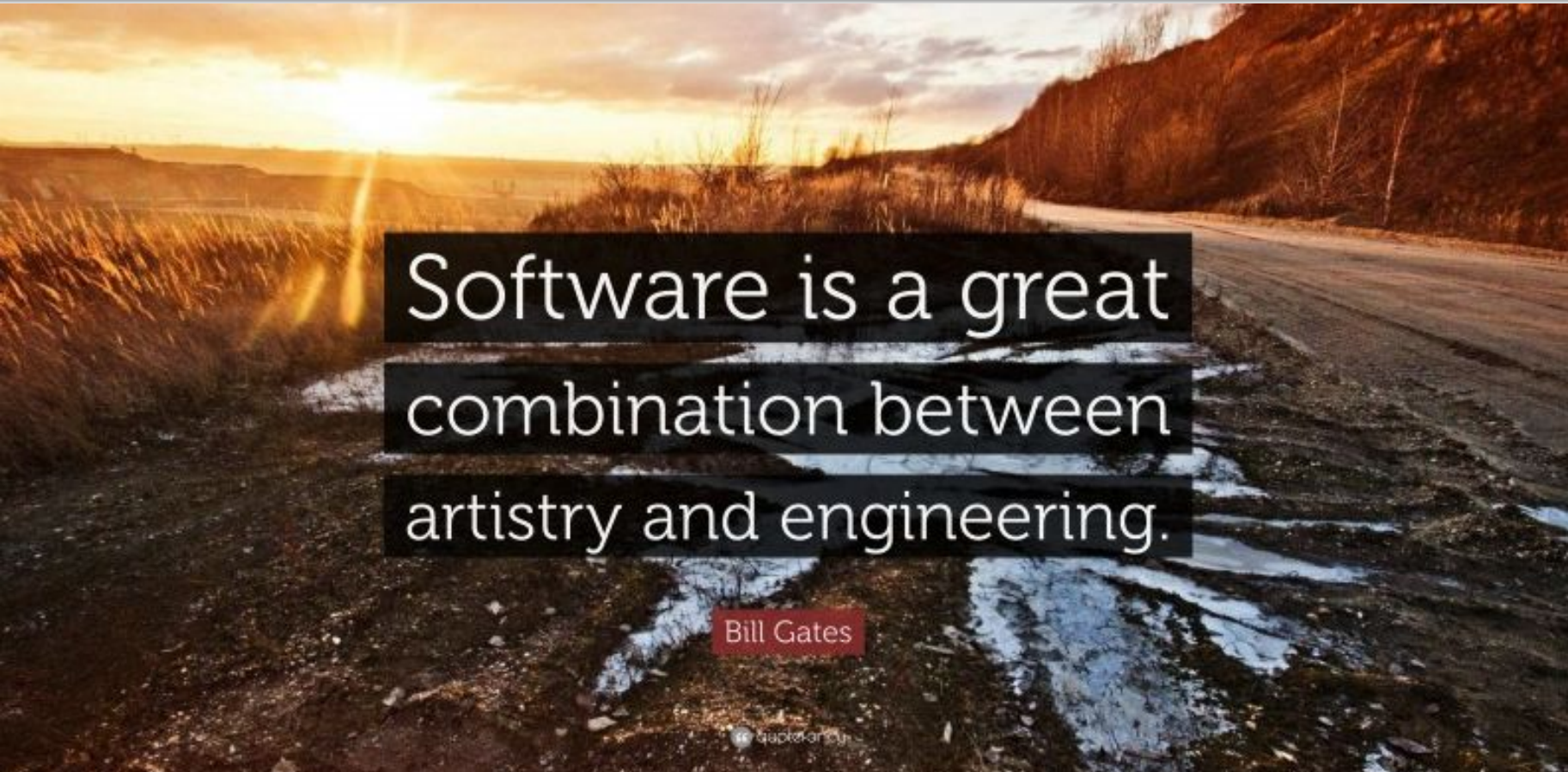








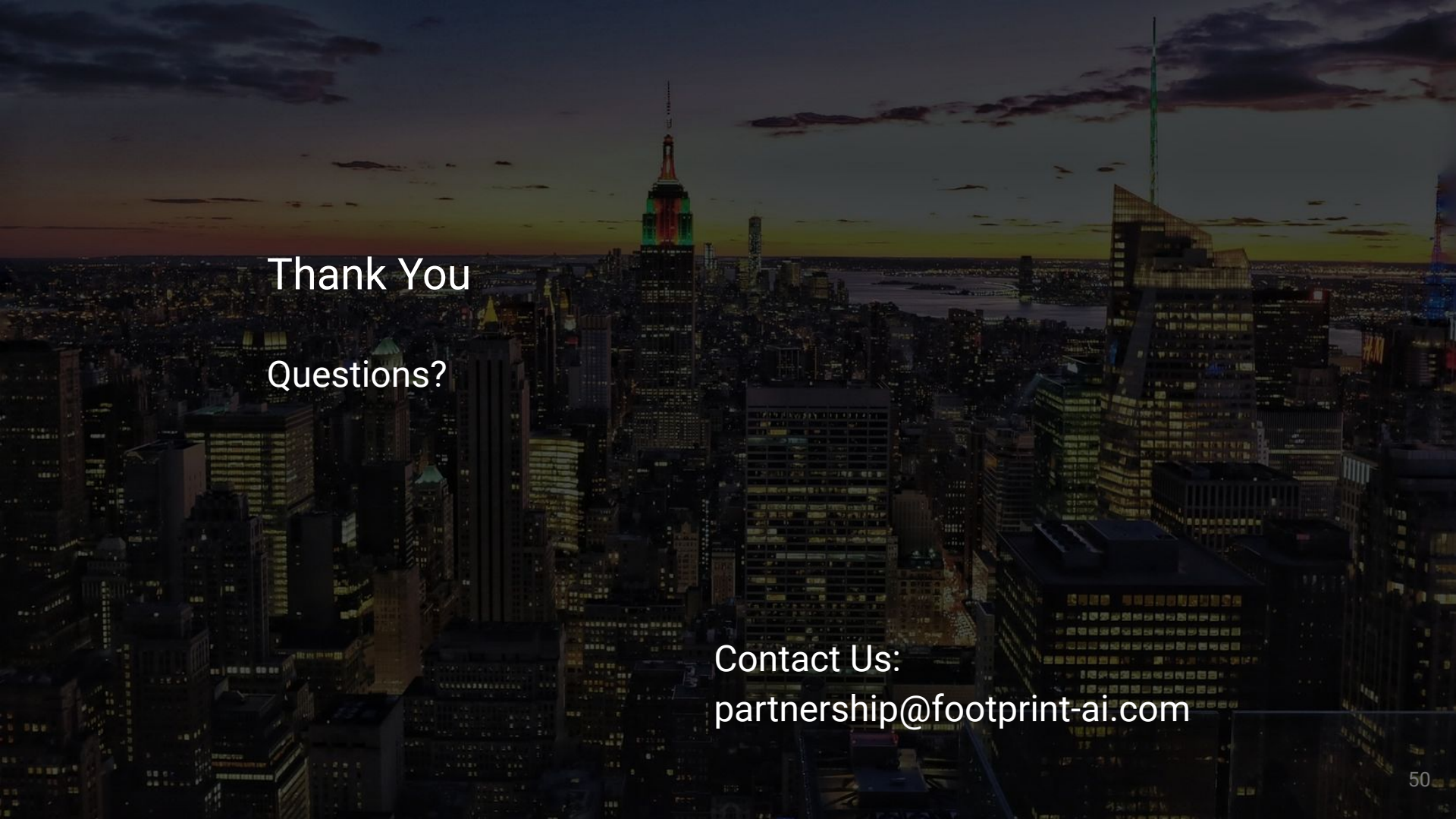
Quote: Software is a great combination between artistry and engineering.

A scenic landscape photograph featuring a winding road that curves through a field of tall, dry grass. In the background, a steep, rocky hillside rises under a dramatic sky with a low sun, creating a warm, golden glow and long shadows. The overall mood is serene and contemplative.

Software is a great
combination between
artistry and engineering.

Bill Gates

© Quotefancy

An aerial photograph of the New York City skyline at dusk. The sky is a mix of dark purple, blue, and orange. The city is densely packed with skyscrapers, many of which are illuminated with their interior lights. The Empire State Building is prominent in the center, with its top lit in red and green. The Hudson River is visible on the right side of the image.

Thank You
Questions?

Contact Us:
partnership@footprint-ai.com