

1/2 Yah Prof

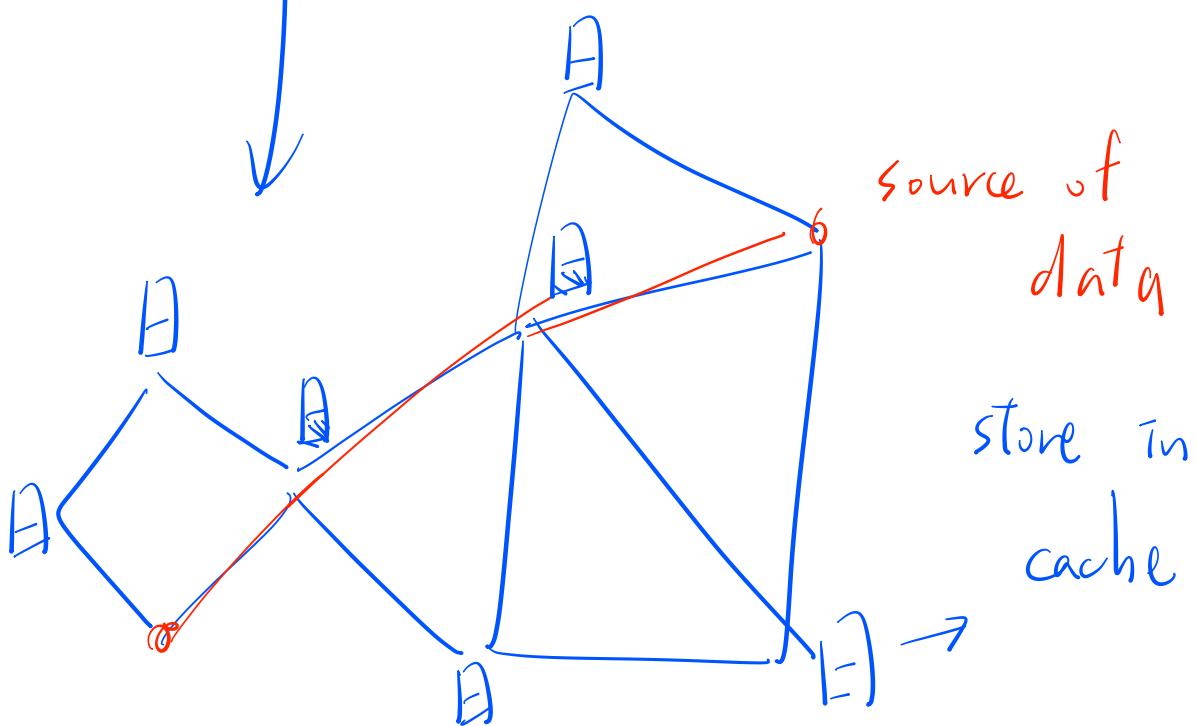
1. Introduce Northeastern institution

2. Joint computation placement

Data movement and caching

↳ DECO

↳ LoAM



framework for joint computation scheduling

request forwarding and caching

particular in edge and fog computing

high interest v.s low interest

computation

Benefit: reduce latency
improve throughput
Efficiency.

LoAM: low latency communication
caching and computation

- nonlinear optimization
- average

Conclusions

- Realization of XR/VR applications faces significant challenges
- Stringent latency constraints require optimization of B5G cellular edge
- Distributed hierarchical computation/storage infrastructure
- Intelligent computation placement, data movement and caching are key
- DECO and LOAM give two complementary, state-of-art approaches

Ray - Prof

OSL

- E East coast
- E West coast
- A Asia

5G → 6G

Challenge : data collection, Interoperability, security.

Ingredients:

Intent-driven RAN

APIs → allow AI operate

Open source in AI, 6G :

Development, Standardization, Innovation

↓

3GPP, O-RAN

share-learning
collaborative

Job in Asia:

1. Test O1, E2, A1
2. Configuration Automation → adjust parameters of gNB & RUS
↳ Configuration & Integration rAPP

管理、優化 RAN

RUS

rAPP

Test Automation → gNB data & control
→ simulator

Deployment Automation → SMO/RIC + Cloud RAN

↓
Service management and orchestration
⇒ 整合管理 O-RAN 的平台
Configuration, Automation rAPP.

Li, Prof

Evolution : 1G ~ 6G
1980 ~ 2030

3G → 4G Social

Fully IP-based ARC
- for video, voice calls (mobile)

4G → 5G Machine

Service-based ARC

Virtualize, Cloud-native

Massive IoT

Telecom market change.

- open Network
- open RAN

e.g. OAI, free5GC

5G → 6G

1. MIMO, New security solution

→ AI-driven

2. 1 Tb/s

Applications:

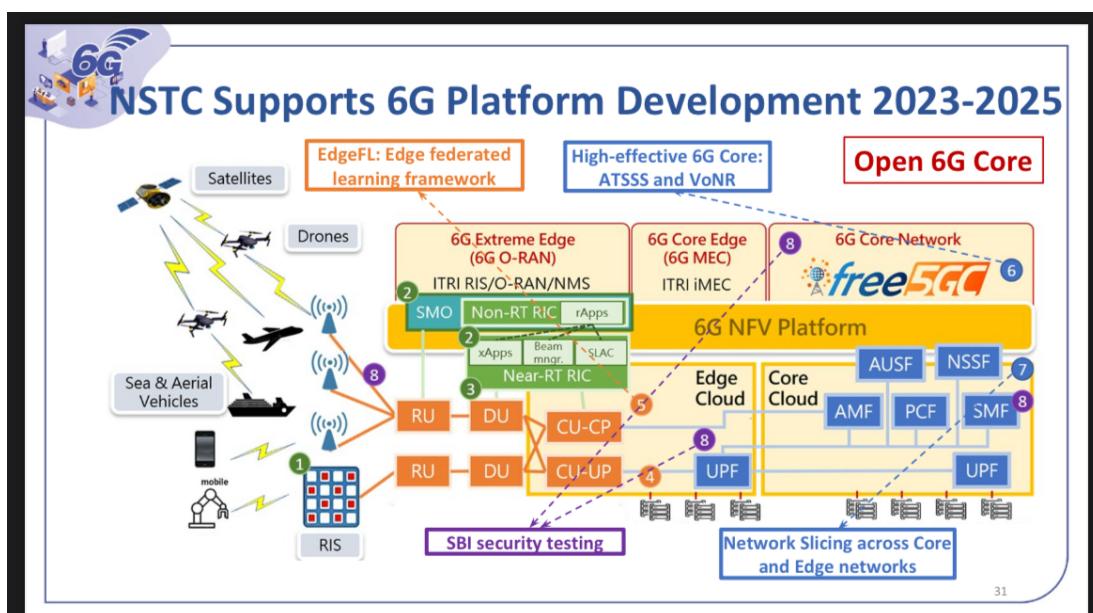
Digital Twin → 接收實體資料，分析模擬，而優化

AR, VR → Immersive XR

Massive Communication → smart homes, citys

When 6G arrive?

2024 → By Nokia's expectation



Len - prof

6G: not only faster 5G

⇒ AI assist, not just add-on.

USER → RAN → Core Network

AI - RAN

for, : AI 專為服務 RAN , 強調目的

and,

on, : AI 做在 RAN 上實作 , 強調位置節點

O-RAN

Different from traditional RIC: RAN

it's open source

Intelligent
Controller



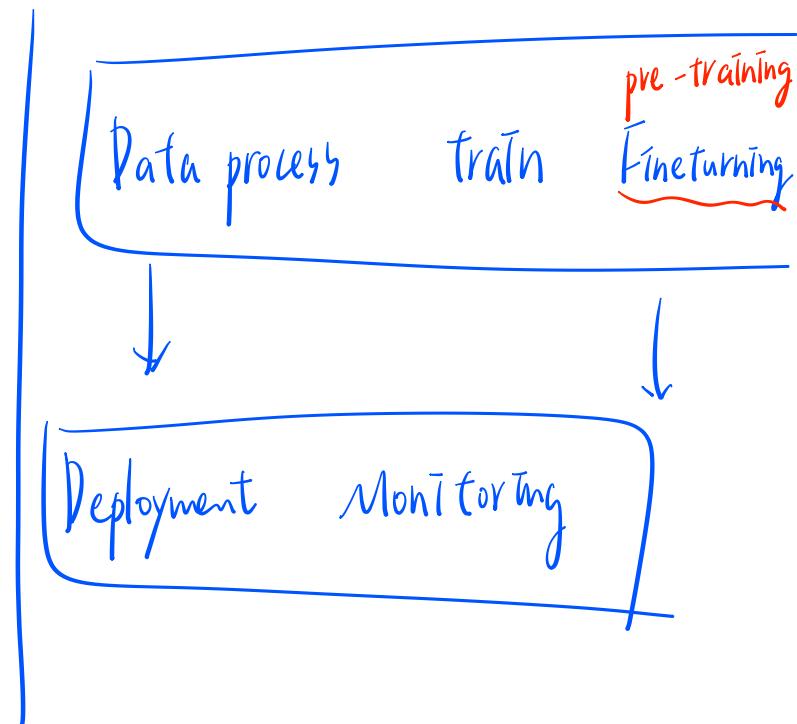
AI/ML Platform

Fragmented AI workflows \leftrightarrow MLOps Integrated workflow

分散的

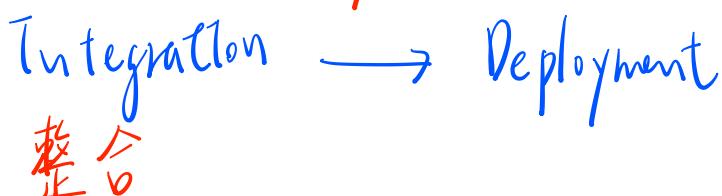
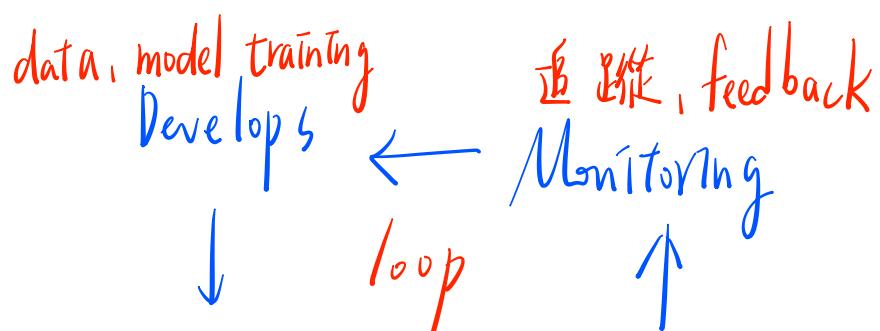


較無系統化



MLOPS:

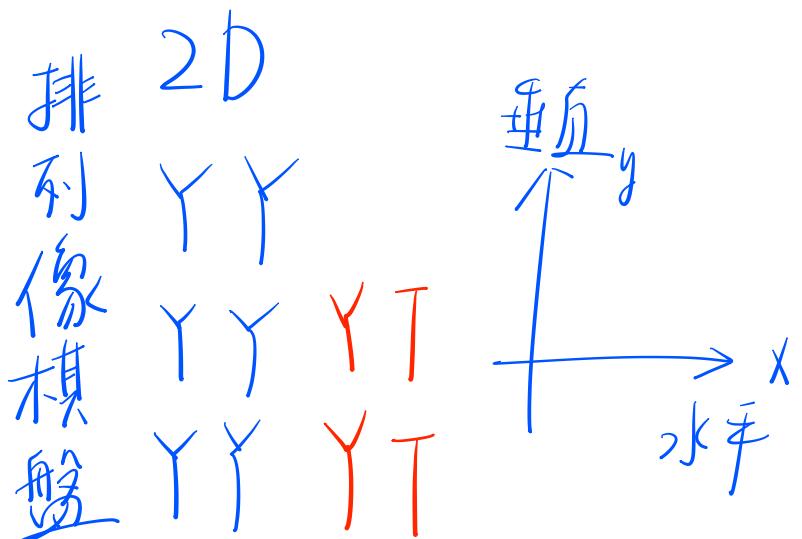
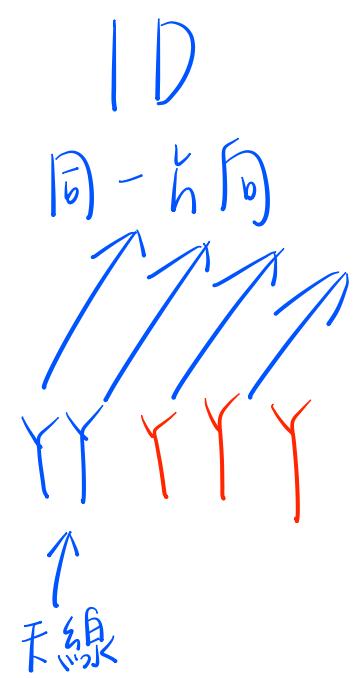
Machine Learning Operations



整合

Isai Prof.

MIMO Radar:



FM CW for distance detection

Frequency Modulated Continuous Wave, 持續發射波
f 隨時間調變(線性)

L1 Prof:

THz applications

$$300 \sim 3000 \text{ GHz} \quad \lambda = 0.1 \sim 1 \text{ mm}$$

Shannon theory

- Use in Space communication

Challenges:

low transistor speed \rightarrow layout optimize

low Pout