7/3

Rangan Prof.

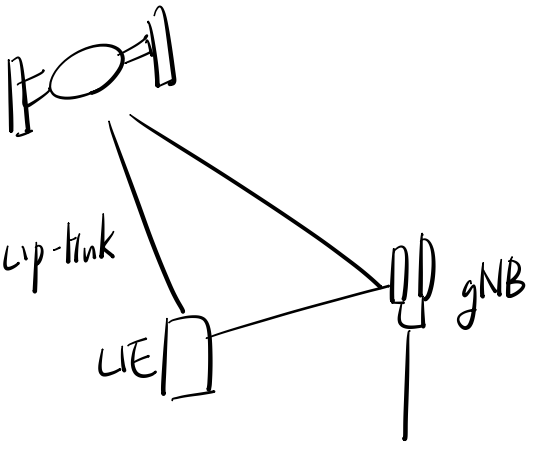
Upper Mid-Band : 1G ~ 24 GHz → FR3

↳ potential 5G-Adv and 6G

challenge : Wide bandwidth

Incumbents

Satellites :



down-link is a challenge.

↓

not know the location of UE

⇒ need a lot of antennas

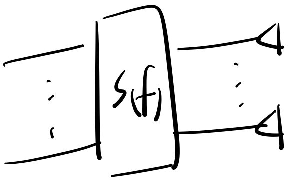
satellite

NT-UE → gNB → UE

Compact Wideband Antennas are difficult

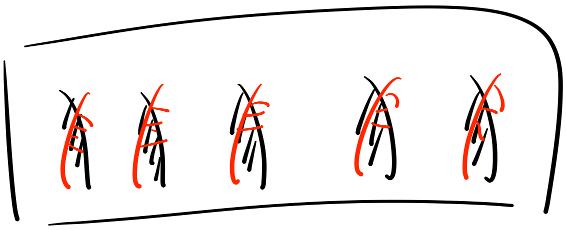
压縮

massive MIMO



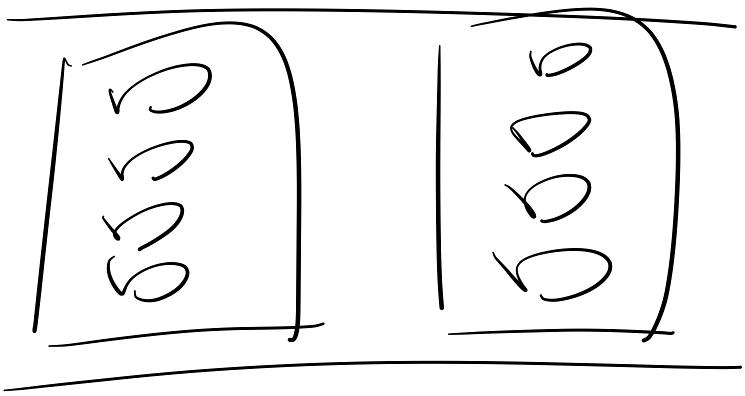
many tightly antennas

⇒ use linear combinations



MIMO Demo platform

control plane is hard



8 layers

Lee . Prof.

AI- assisted self-organizing

SONs - self configuration

- self optimization

- self healing → fault diagnose

fault diagnosis Problems

→ 可能同時很多錯誤發生

→ 層級嚴重不一

⇒ 用 DNN 判斷 faults 和 KPI 的關係 (KPI: 績效指標，4個)

seperate joint

Fast deployment

ZOO : black box optimization

Wen Prof.

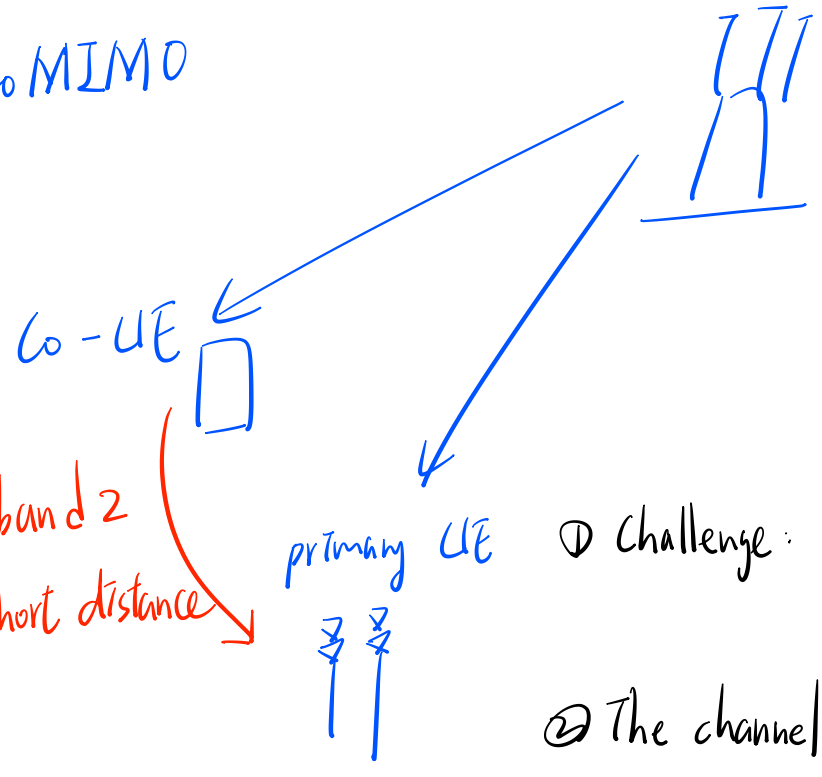
MIMO on 900MHz

UE : only Sony. Xiaomi

gNB : only China . Australia . Thailand) very few

On low-band, some 2Rx can perform close to 4Rx

UE - coMIMO



① Challenge: position of Co-UE must be known

② The channel between UE must be removed

4x4 MIMO v.s 多于4 UE-coMIMO

多于4個 band

≒ better

primary v.s Co-UE

哪個能 wake up 另一個，它就是 primary

Shieh Prof

IoT NTN Challenges

- High latency in Satcom
- Small data
- coordinated → uncoordinated multiple access

DVB → satellit standard

NOMA 非正交多重存取

利用功率、碼字區分不同用戶

感知 通訊

ISAC - Integrated (Sensing and communication) 整合成一平台

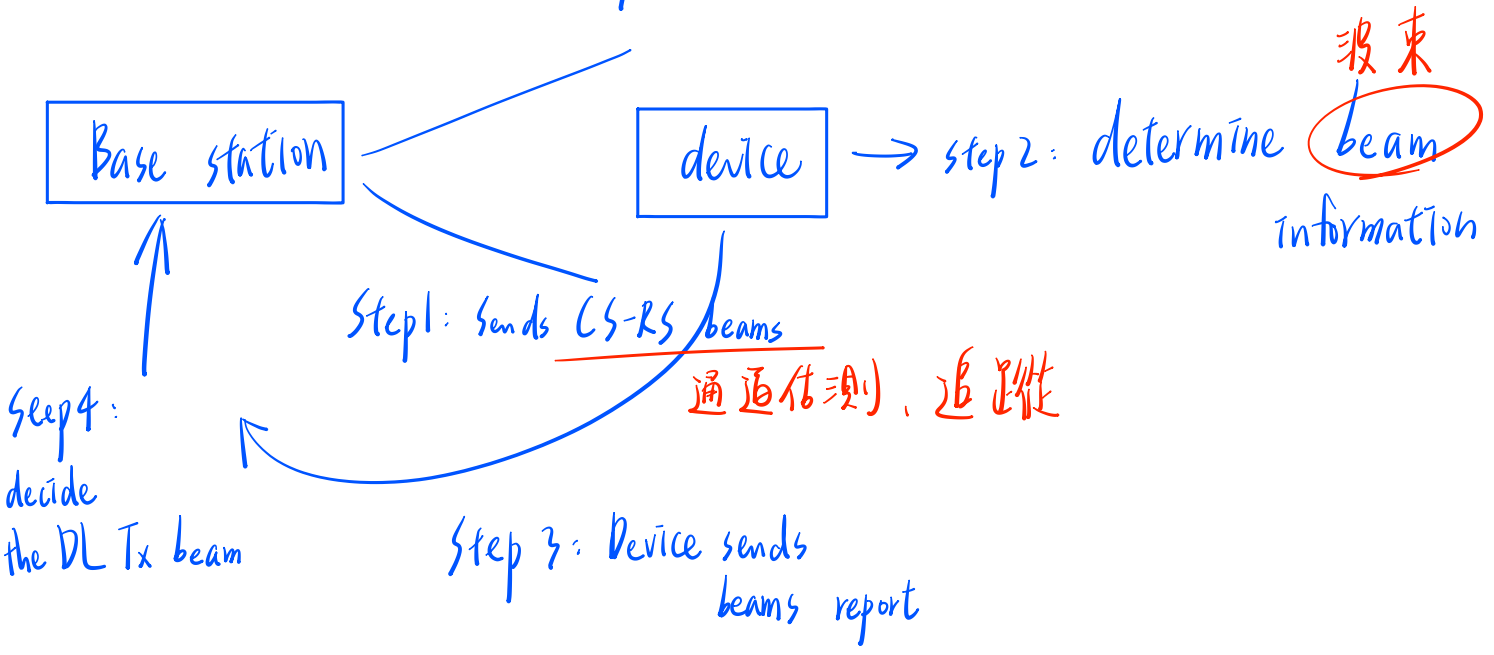
- UAV detection

無人機偵測

AI/ML for Beam Management.

Huang Prof.

Air-Interface Life cycle



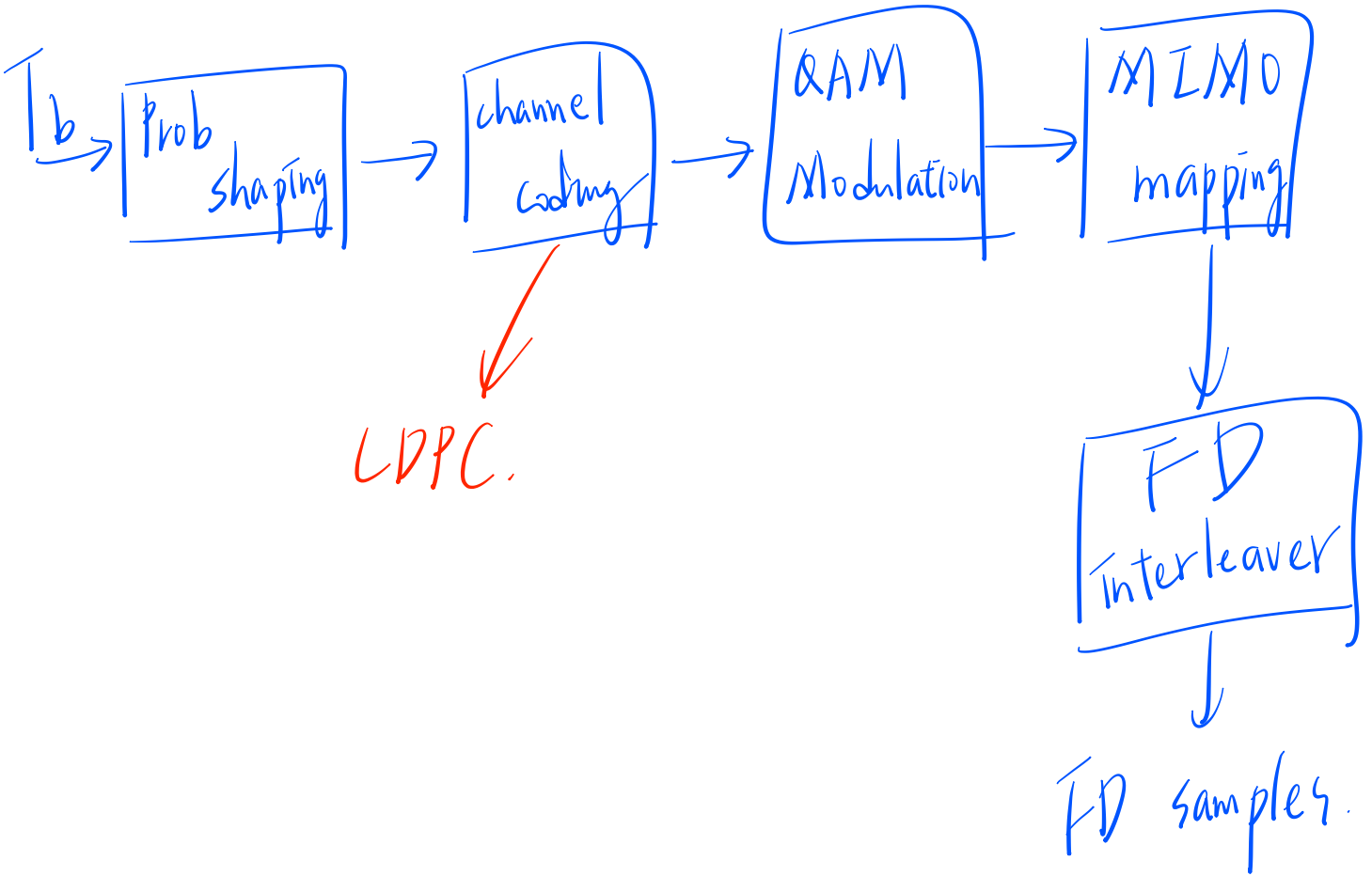
monitoring performance (监控效能)

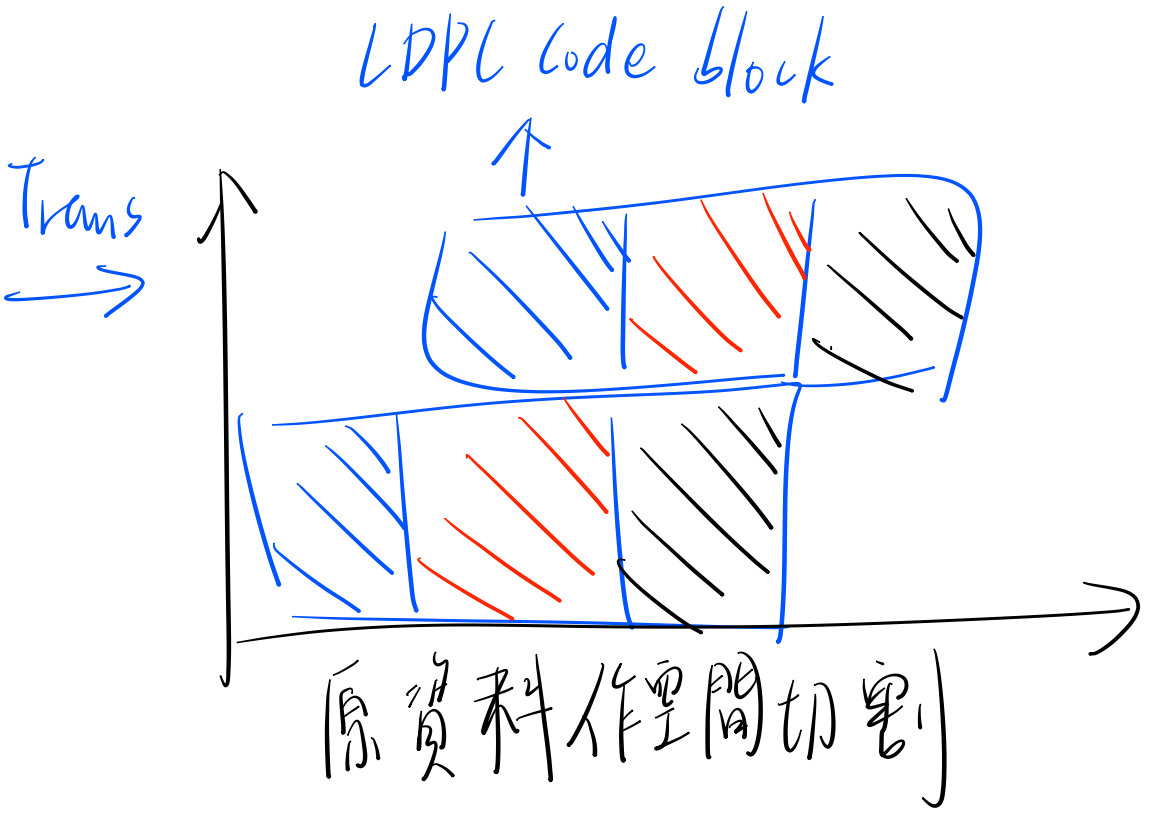
- model management decisions 选择模型
- Allocate proper resources 更好寻找资源

Hanny Prof.

5G	6G
等权固定. base on worst-case network requirements	DD入 AI-ML 等权依 network KPI 下取用

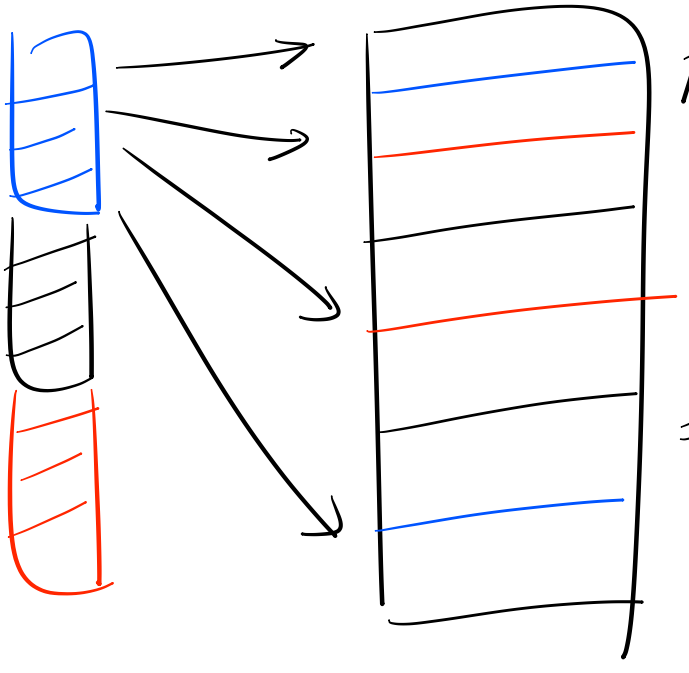
Smart UE with (Tx/Rx) optimization





⇒ 平行處理

提升 throughput



在 frequency domain

作分散處理

⇒ 對抗通道衰落

提高可靠性