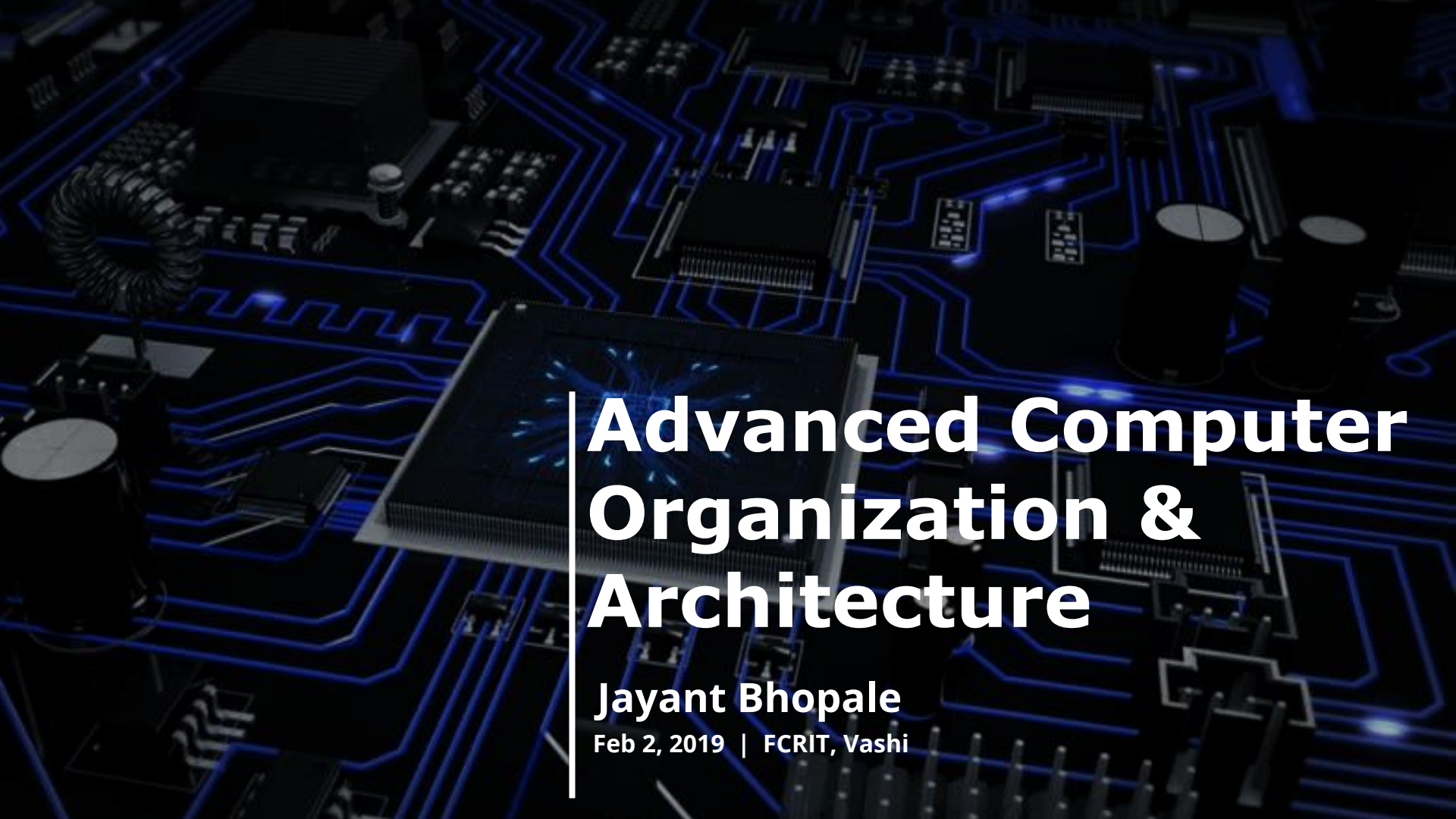
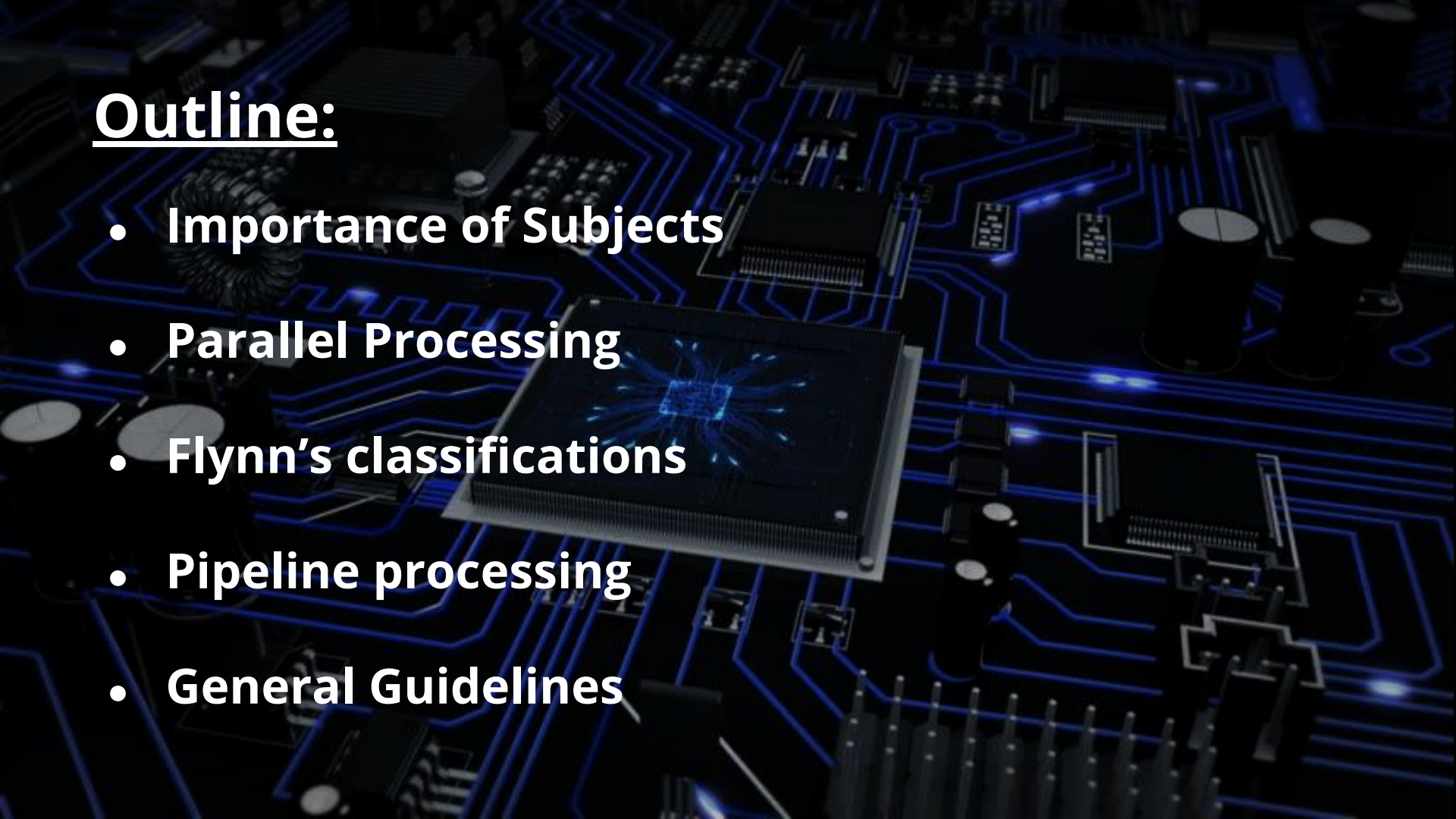


# Advanced Computer Organization & Architecture

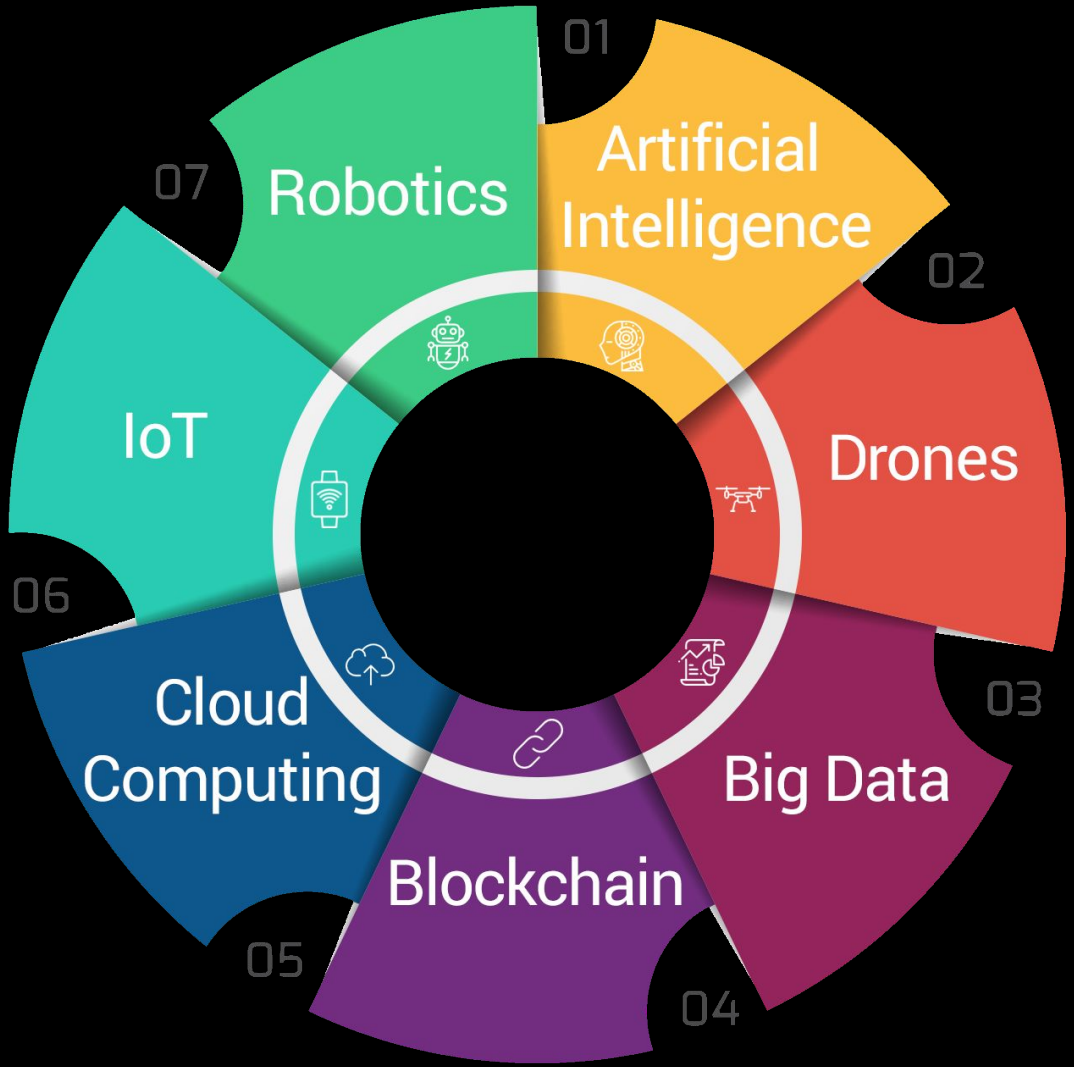
**Jayant Bhopale**

**Feb 2, 2019 | FCRIT, Vashi**

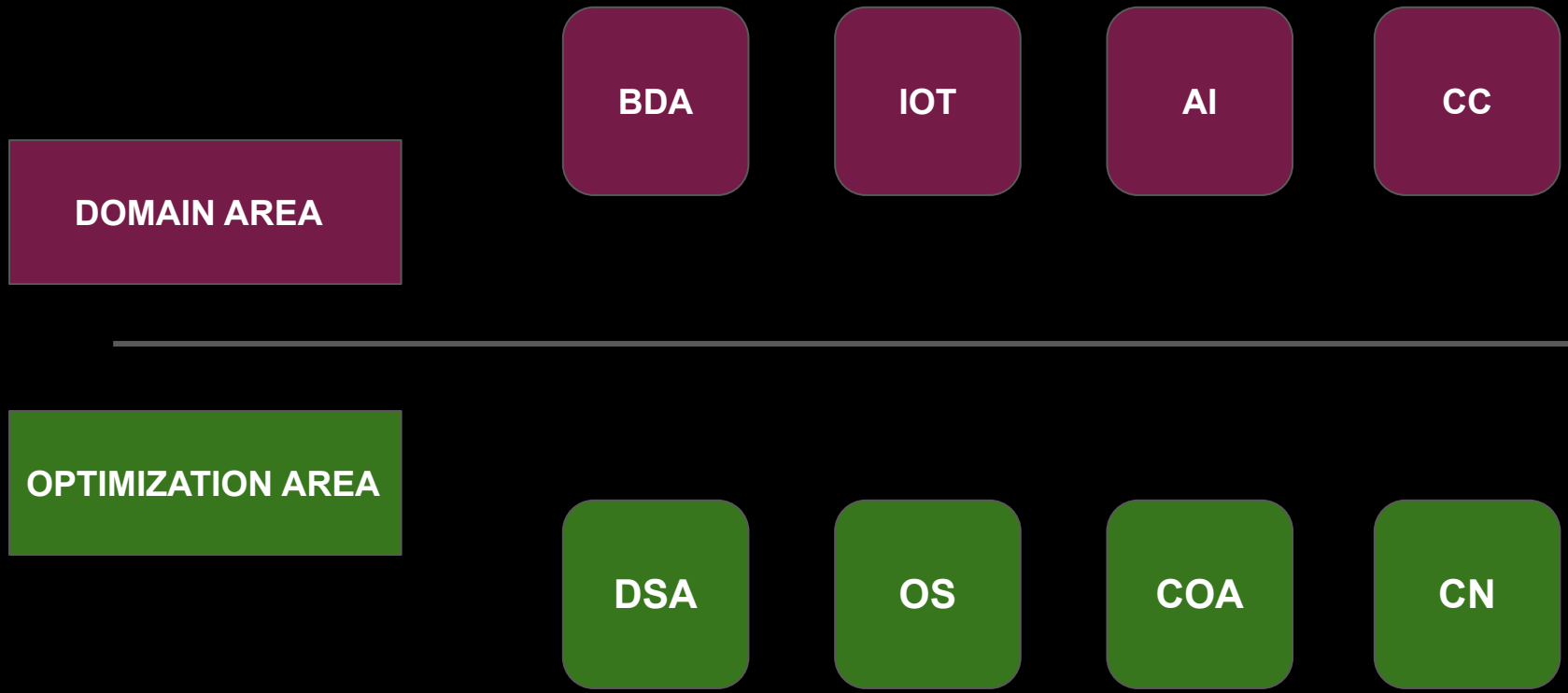


# Outline:

- Importance of Subjects
- Parallel Processing
- Flynn’s classifications
- Pipeline processing
- General Guidelines

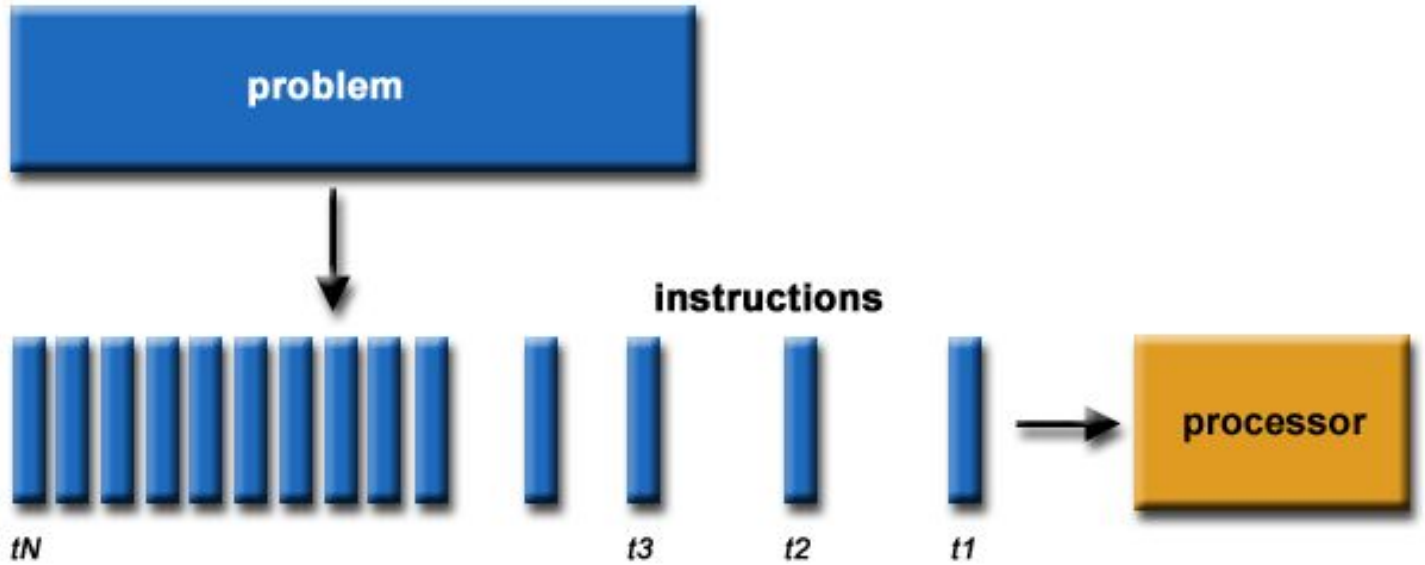

01
Artificial Intelligence
02
Drones
03
Big Data
04
Blockchain
05
Cloud Computing
06
IoT
07
Robotics

# Importance of Subjects



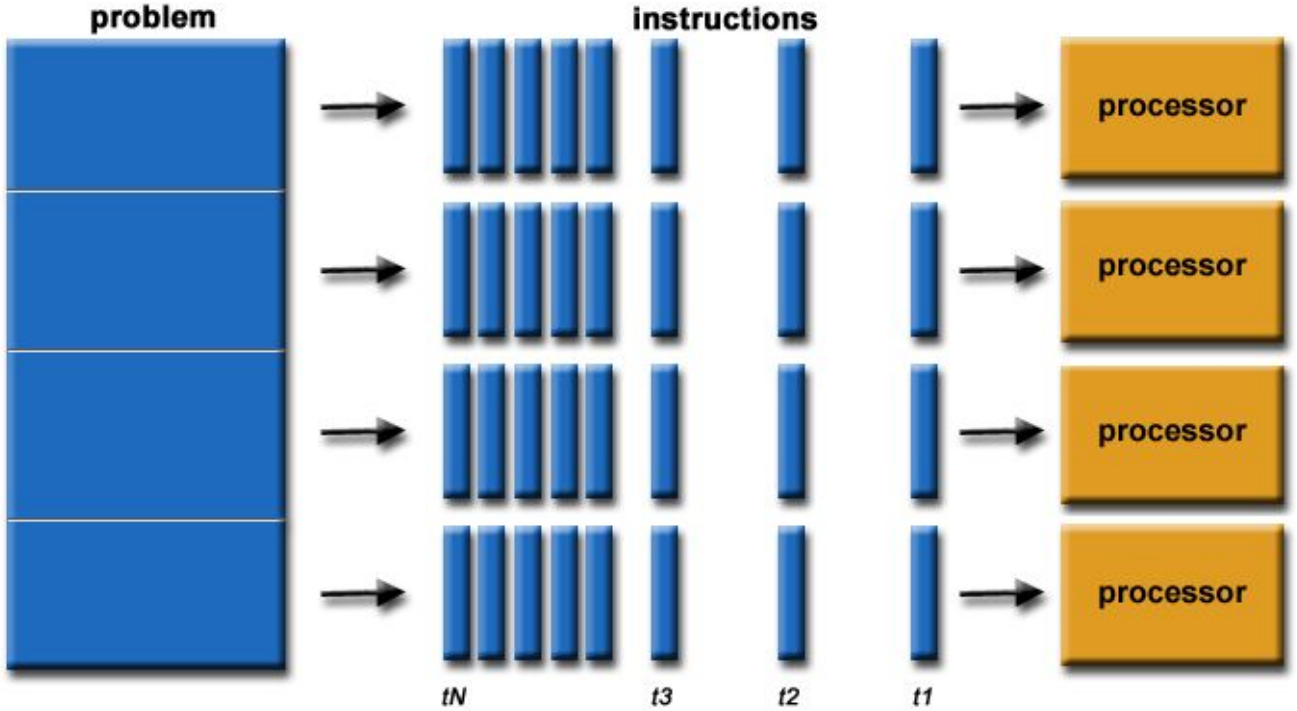
# Serial Processing

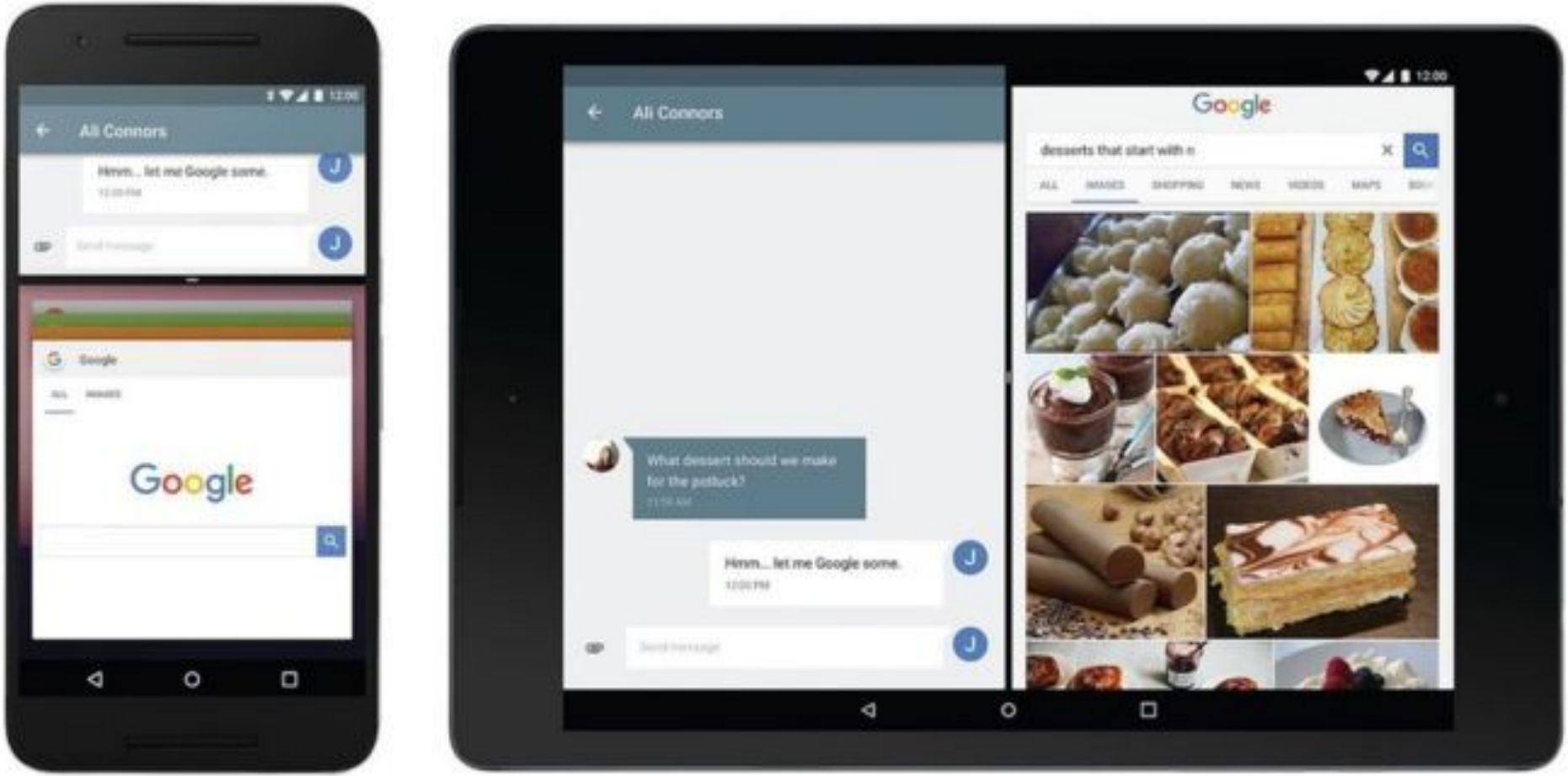
1 Processor
1 Instruction at a time.



# Parallel Processing

Multiple Processor/ 1 Multicore Processor
Multiple instructions at a time.

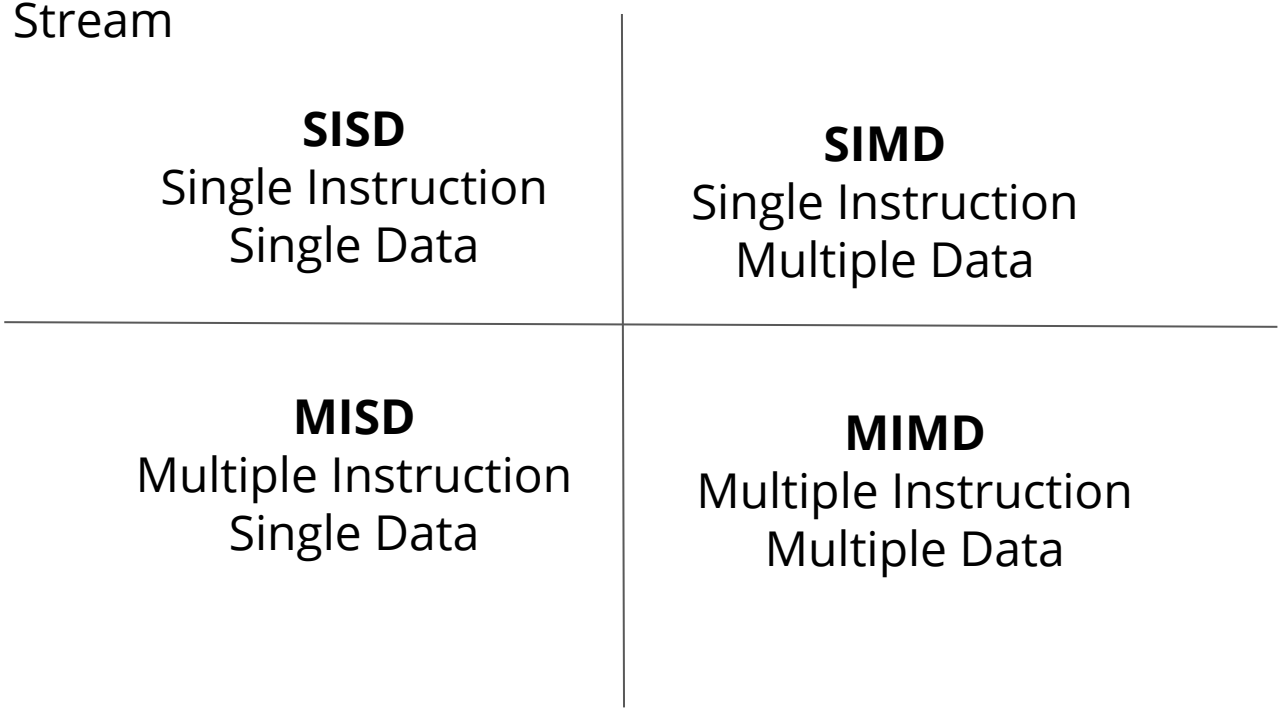


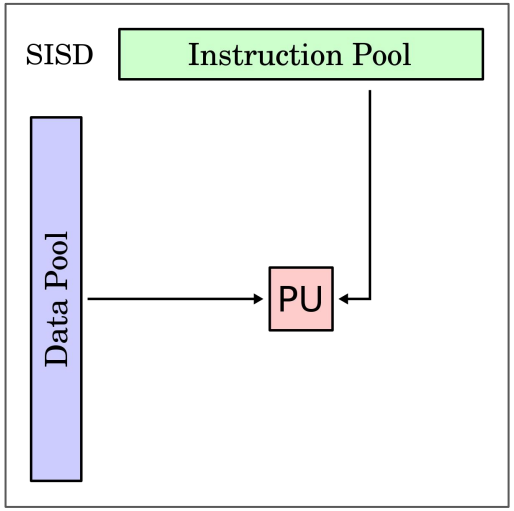

Ali Connors
Hmm... let me Google some.
Google
Ali Connors
What dessert should we make for the potluck?
Hmm... let me Google some.
Google
desserts that start with n

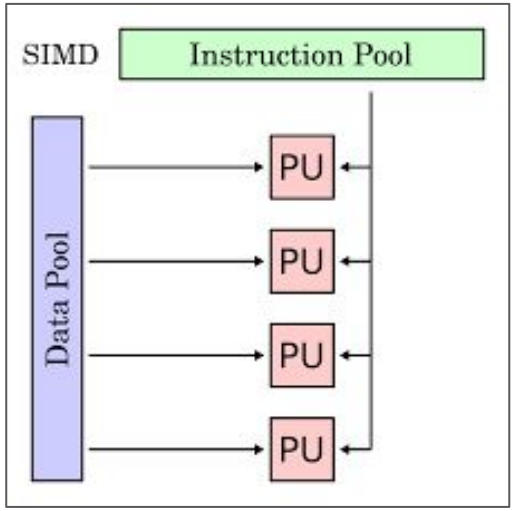
# Flynn’s Classical Taxonomy

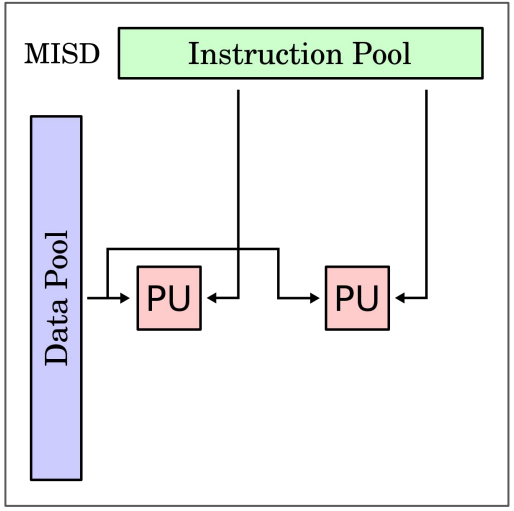
→ 2 Dimensions

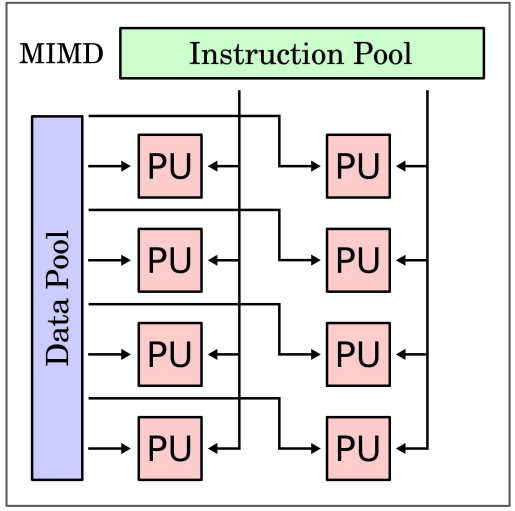
- Instruction Stream
- Data Stream




SISD
Instruction Pool
Data Pool
PU


SIMD
Instruction Pool
Data Pool
PU
PU
PU
PU

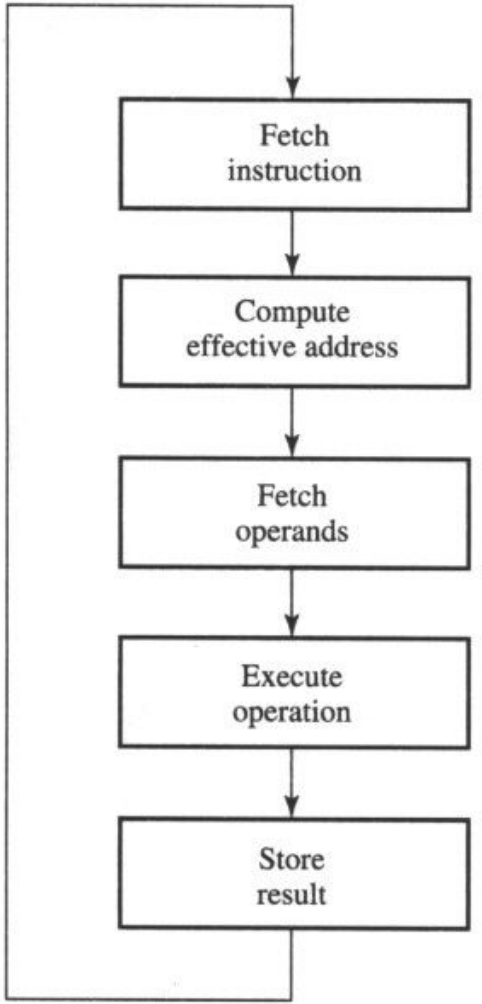

MISD
Instruction Pool
Data Pool
PU
PU

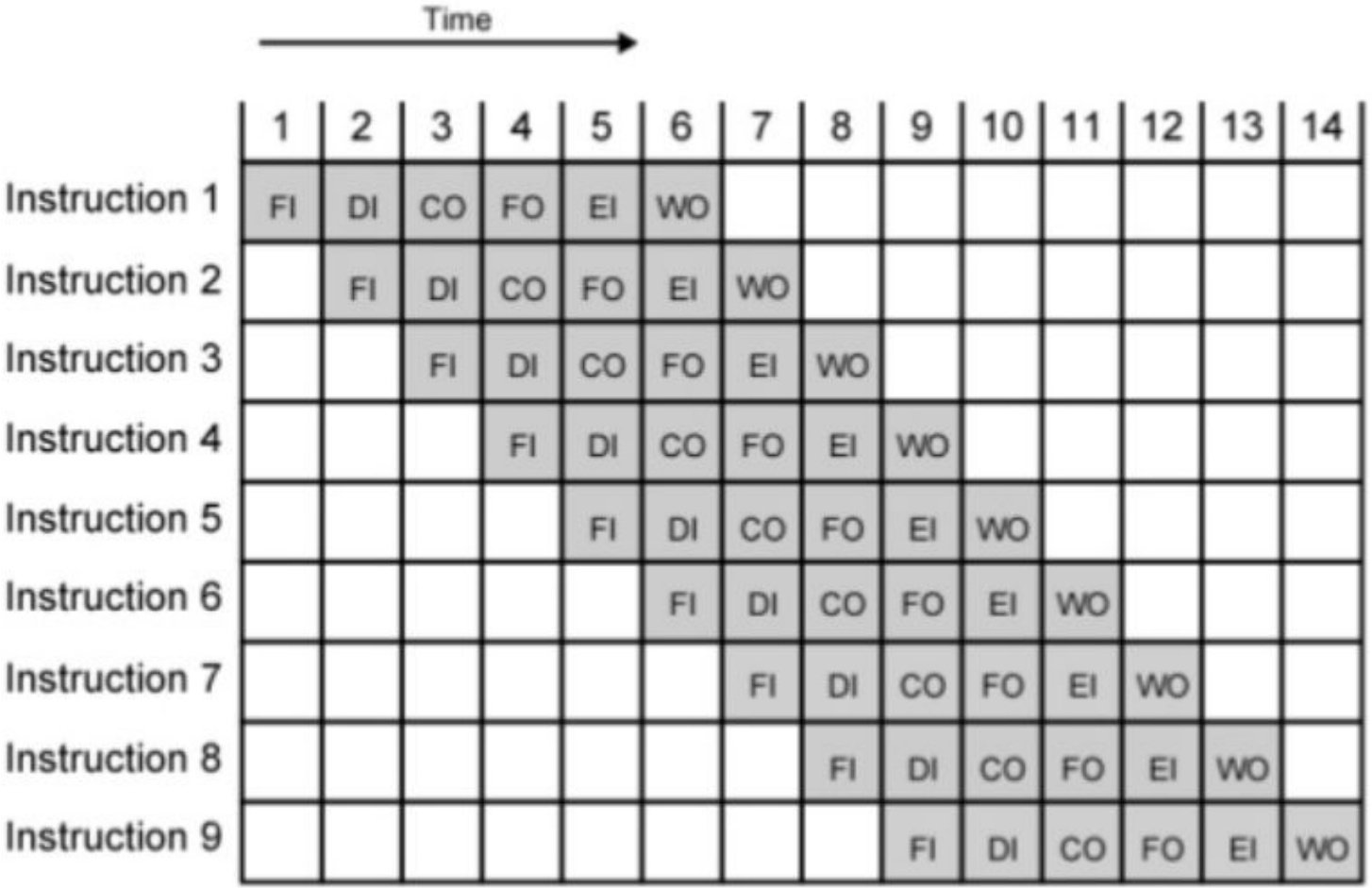

MIMD
Instruction Pool
Data Pool
PU
PU
PU
PU
PU
PU
PU
PU

# Pipeline Processing

→ For Single processor optimization.

→ Instruction Execution Cycle




Time
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Instruction 1 FI DI CO FO EI WO
Instruction 2 FI DI CO FO EI WO
Instruction 3 FI DI CO FO EI WO
Instruction 4 FI DI CO FO EI WO
Instruction 5 FI DI CO FO EI WO
Instruction 6 FI DI CO FO EI WO
Instruction 7 FI DI CO FO EI WO
Instruction 8 FI DI CO FO EI WO
Instruction 9 FI DI CO FO EI WO