PEMROSESAN PARALEL
CCE60218

Teknik
Komputer
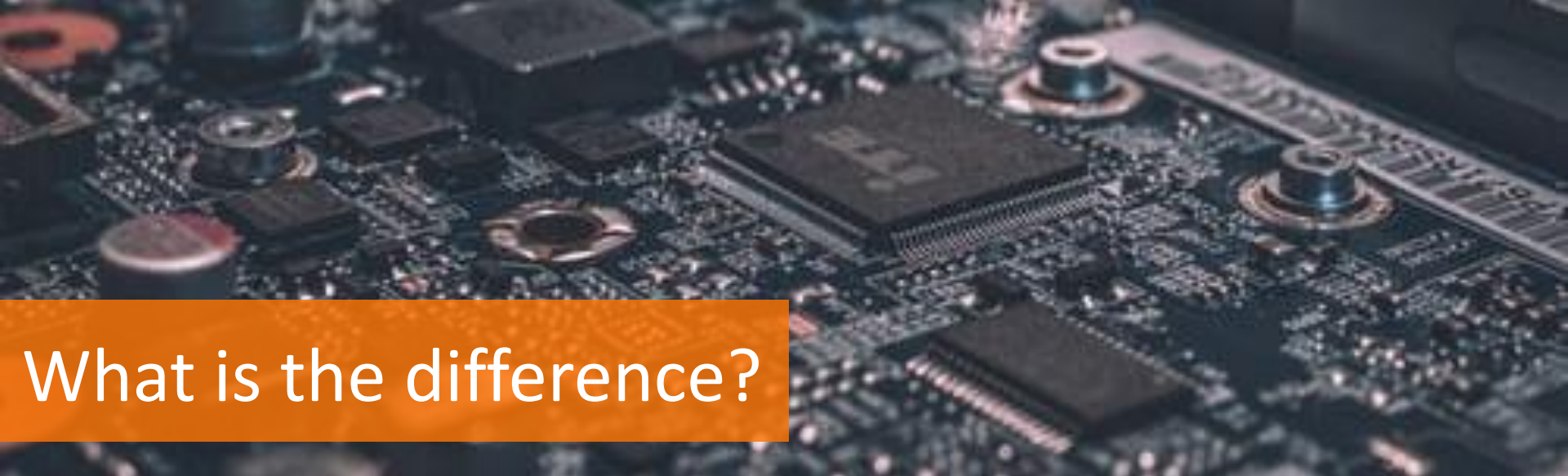
Implicit & Explicit Parallelism

What is the difference?

Implicit Parallelism
- Programmer does not define how computation is parallelized
- Compiler parallelize the execution automatically
- Language's constructs are inherently parallel

Explicit Parallelism
- It is explicitly defined by the programmer
- Can be difficult to program, debugging is hard
- Examples: threads, OpenMP, MPI, etc.

Languages Example of Implicit Parallelism

- HPF (High Performance Fortran)

- LabVIEW (Laboratory Virtual Instrumentation Engineering Workbench)

- MATLAB

- NESL

- SISAL

- ZPL

Explicit Parallelism

- Thread

- Asynchronous

- Multiprocessing

- OpenMP

- MPI

Thread

- Process: A process can be thought of as a program in execution.

- Thread: A thread is the unit of execution within a process. A process can have anywhere from just one thread to many threads.

Process				
Thread 1				
Thread 2				
Thread 3				

Multithreading in Python

```python
import threading
import time

def func():
    print('ran')
    time.sleep(1)
    print('done')

x = threading.Thread(target=func)
x.start()
print(threading.activeCount())
```

```
ran
2
done
```

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