TESLA AUTOMACTION

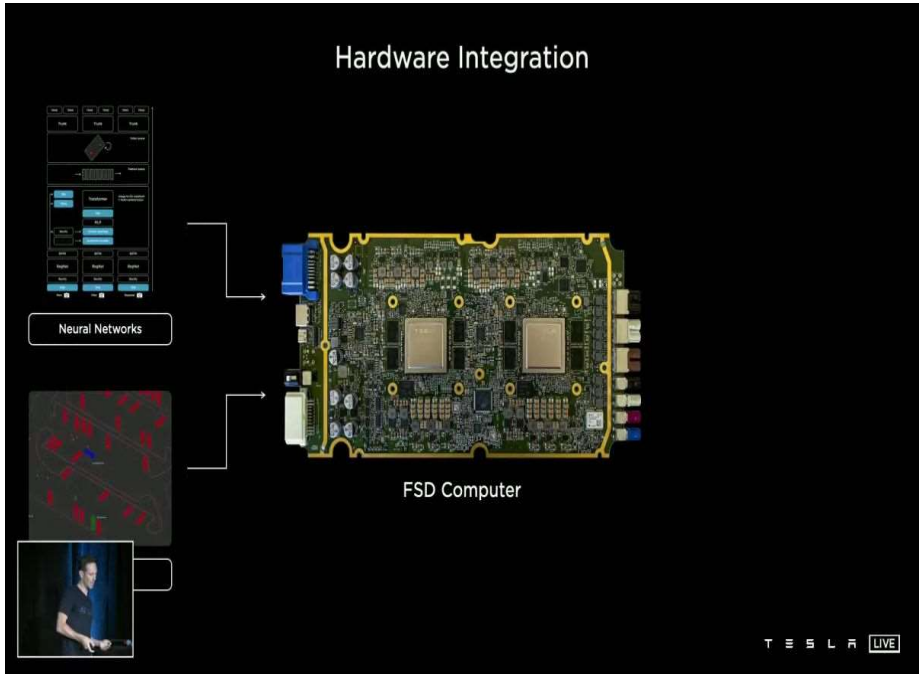
HARDWARES AND SENSORS

INTRODUCTION

- Tesla automation is the process of automation technology to drive automation cars with out any human interferences to accomplish this task
- This presentation divided into two category first one abouts sensors used and hardware components this presentation describe the prosessing unit of hardware technology in tesla used for automaction car
- Second a small intro about dojo d1 chip

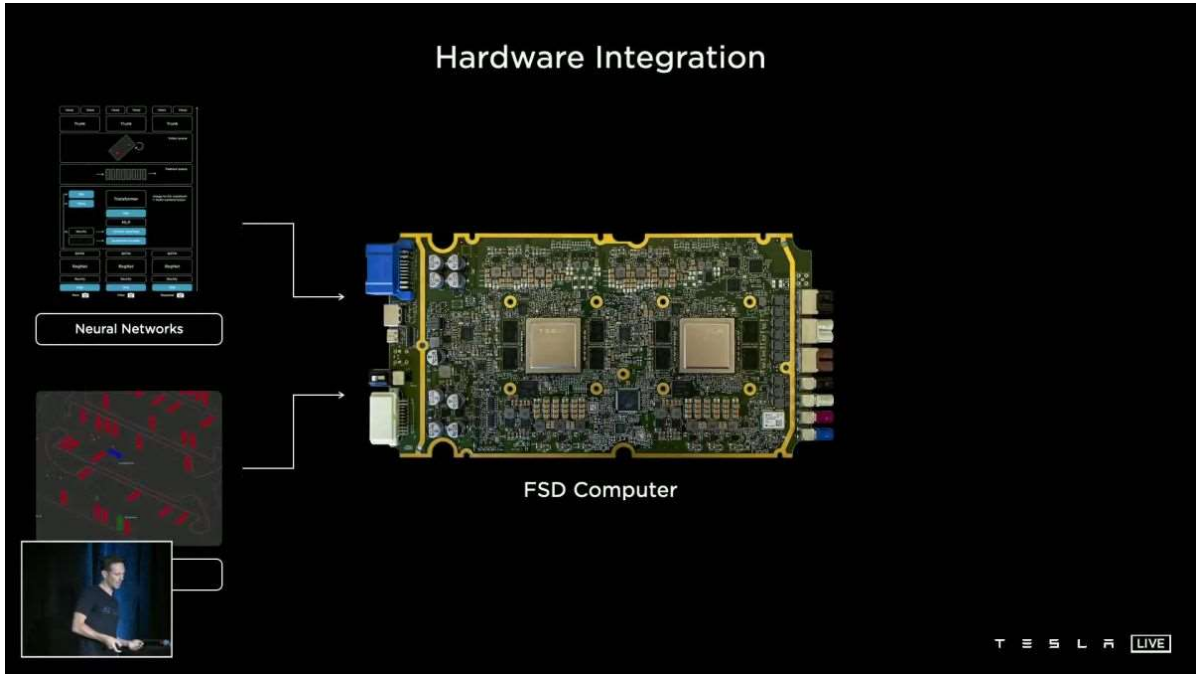
FSD-Hardware components

- 2 chips on one pcd LPDAR4
- Cpu layer – cortex At2 with 12 ARMS bases cores
    - Cpu-3
    - Gpu1
    - 2Npu,image processor and video encoder
- Npu layer -2 macs
    - SRAM
    - CONTROL LOGIC
    - Each npu pack with 32 mb of sram
- 8 gb LPDDR4



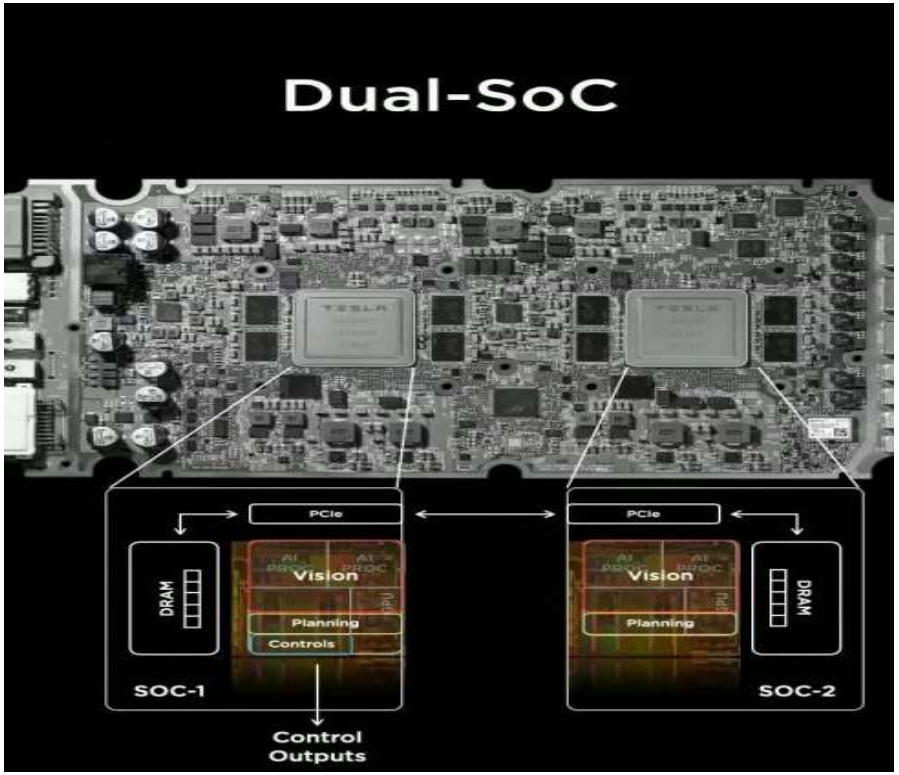
TESLA NPU LAYOUTS

- Which include multiplier accumulactor unit
- Local SRAM and control logic
- Each npu have 32 mb of SRAM
- Each npu have 33 (tops)
- 144 tops for each chip



FSD CHIP

- Its is the brain of the tesla car to process the data collected
- The sensor package designed into Tesla Model 3 includes: eight cameras which provide 360-degree visibility around the car within a radius of 250 meters; 12 ultrasonic sensors that complete this vision system.
- Together, they allow the detection of hard and soft objects at a distance and with almost twice the accuracy of the previous system



- The package also incorporates a forward-facing radar system with improved processing capabilities.
- It provides additional data about the surrounding environment on a redundant wavelength that can see through heavy rain, fog, dust and even beyond previous cars.
- Sonar, on the other hand, uses ultrasound to detect obstacles within a radius of 8 meters around the car.
- It works at any speed and also controls the blind spot. The data collected by the sonar is also used by Autopilot to manage the automatic lane change during overtaking.
- Finally, GPS is used to detect the position of the car concerning the road.


Ego Speed: 34.25 MPH
time: 772.797990000
CAL P −0.65 Y 0.50 R 0.00 deg
Vision FPS – TurboA: 17.87 TurboB: 22.87
NL(0.01), E(0.99), F(0.00), TF(0.00), S(0.00)
NRW: FLP(0.00), FRP(0.00)
0.00 BLINDED
0.00 SMOOTH_SAILING
L:3 R:0 F:4 ON:0
W:14.9 AP:5.4 I:0
VS: 43.2 MPH St: 1
merge: 1.0 1 113:2
58
32
31
32
94
CITY_STREETS – STOP_BEV, HYDRANET_BACKUP, HYDRANET_SELFIE, OBJECTS3D_MAIN, OBJECTS3D_NARROW, OBJECTS3D_FISHEYE,
MAIN –

D1 Chip

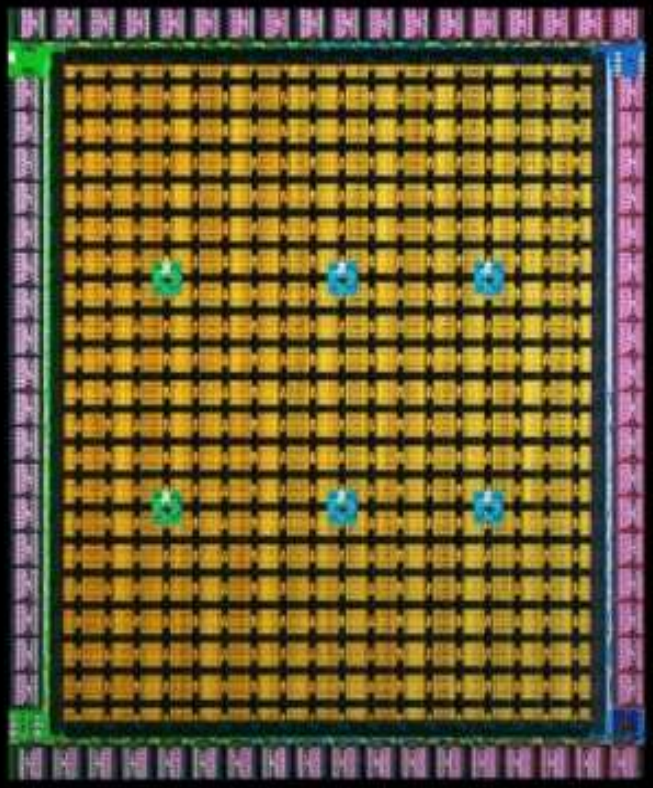
362 TFLOPs BF16/CFP8

22.6 TFLOPs FP32

10TBps/dir. On-Chip Bandwidth

4TBps/edge. Off-Chip Bandwidth

400W TDP



645mm²
7nm Technology

50 Billion
Transistors

11+ Miles
Of Wires

Training Tile