Choose the Right Hardware

Proposal Template

Scenario 1: Manufacturing

Client Requirements and Potential Hardware Solution

Look through the scenario and find any relevant client requirements. Then, suggest a potential hardware type and explain how this hardware would satisfy each of the requirements.

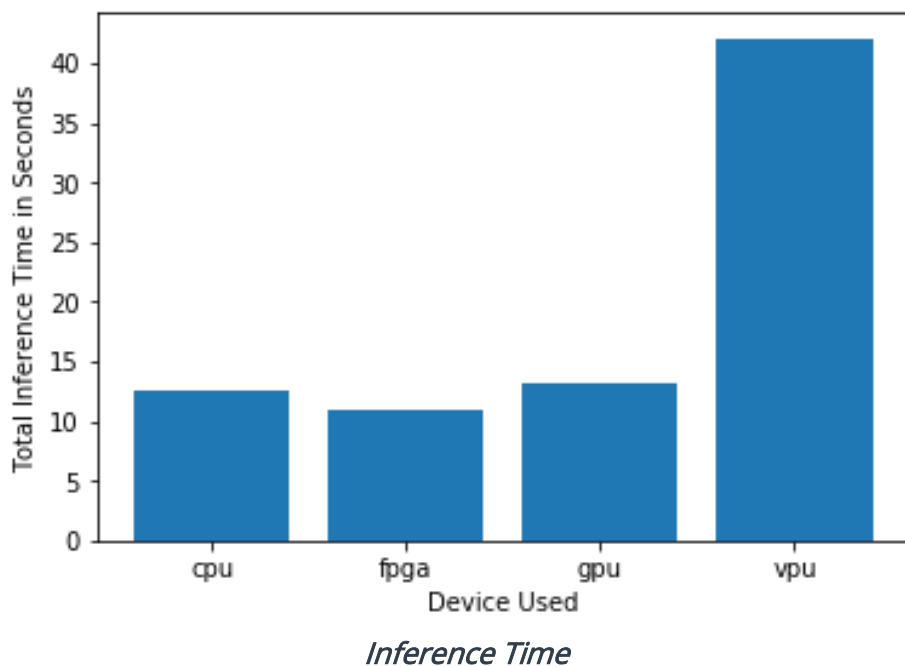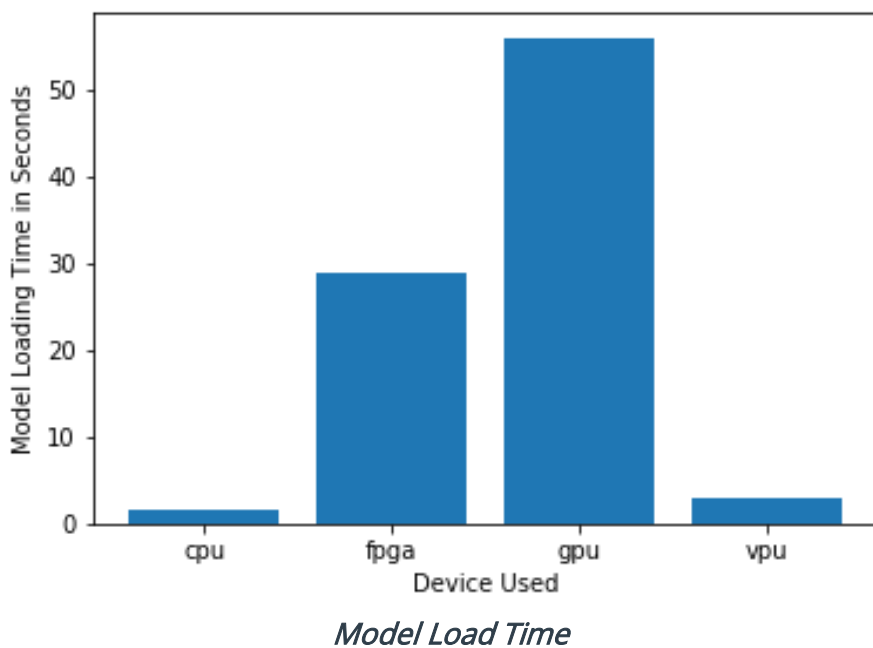| Which hardware might be most appropriate for this scenario? (CPU / IGPU / VPU / FPGA) |
|---|
| *FPGA* |

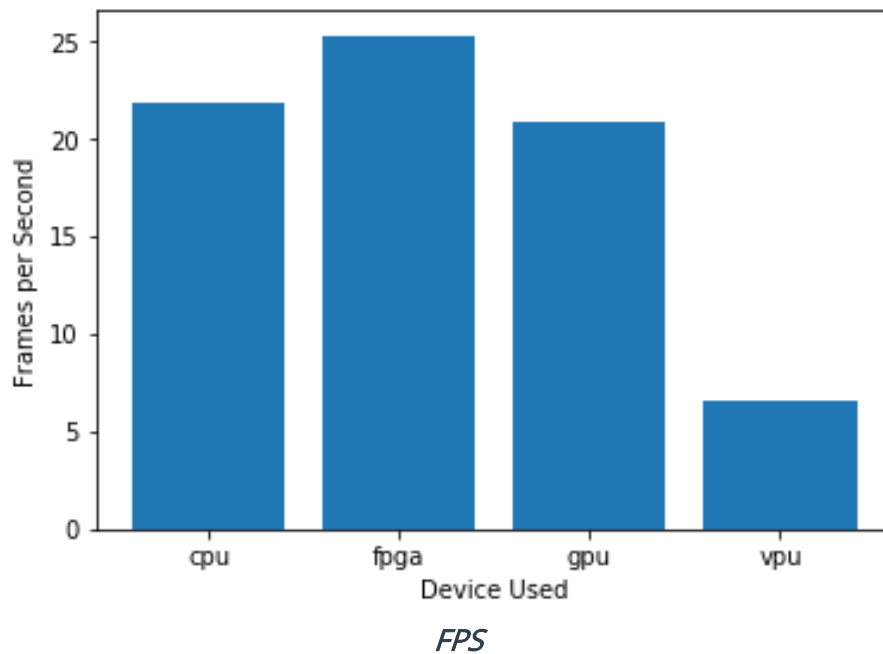| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: *The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.*	*Example explanation:* *VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.*
The client has two tasks. *1) Count the number of people in the factory line* *2) Detect chip flaws* *He also needs a system that is fast, flexible and reprogrammable.*	*FPGA are very fast, flexible and reprogrammable.*
Money is not the problem.	*FPGAs are more expensive than other options, but better for the customer scenario*
The system should last at least 5-10 years	*FPGAs have a long lifespan.*

Queue Monitoring Requirements

Maximum number of people in the queue	The max number of people in the queue is *2*

Model precision chosen (FP32, FP16, or Int8)	FP16 (FPGA)

Test Results

After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).

Model Load Time

Inference Time

FPS

Final Hardware Recommendation

Now synthesize your points from above and provide a brief write-up describing why the chosen hardware is the best choice for this scenario. Be sure to discuss the client's requirements, the test results, and how these relate to one another (e.g., perhaps one of the devices performed better than the rest, but does not meet one of the client's requirements).

Write-up: Final Hardware Recommendation
The FPGA is the perfect choice. It is faster than all other variants and has low inference times. In addition, the FPGA has the longest lifespan and can easily be used for other tasks depending on customer requirements. Long term requirement of the project fits FPGA specifications. It can be also reprogrammed according to the change in work environment. The desired FPS is also achieved in contrast to the other variants. Furthermore, the customer also has no budget problem.

Scenario 2: Retail

Client Requirements and Potential Hardware Solution

Look through the scenario and find any relevant client requirements. Then, suggest a potential hardware type and explain how this hardware would satisfy each of the requirements.

UDACITY

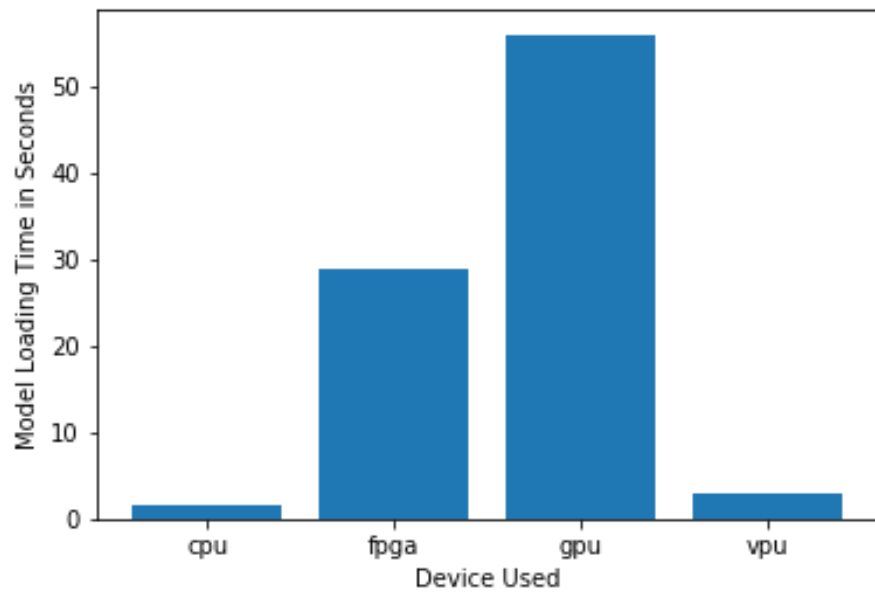| Which hardware might be most appropriate for this scenario? (CPU / IGPU / VPU / FPGA) |
| --- |
| *IGPU* |

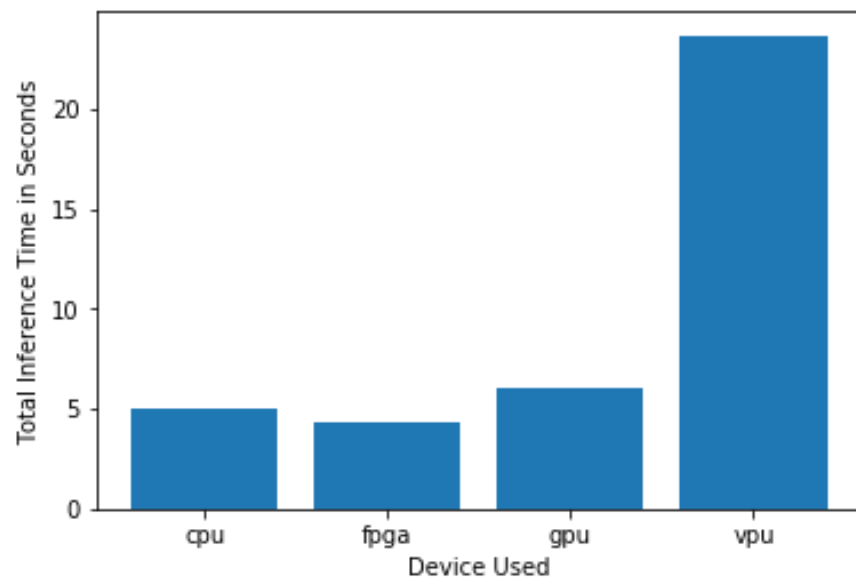| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
The customer has no money for more equipment.	*IGPU it is integrated in core i7 intel processor and is not fully occupied*
The task does not require high speed inference	*A maximum of 5 people are employed at the checkout.*
[TODO: Type your answer here]	*[TODO: Type your answer here]*

Queue Monitoring Requirements

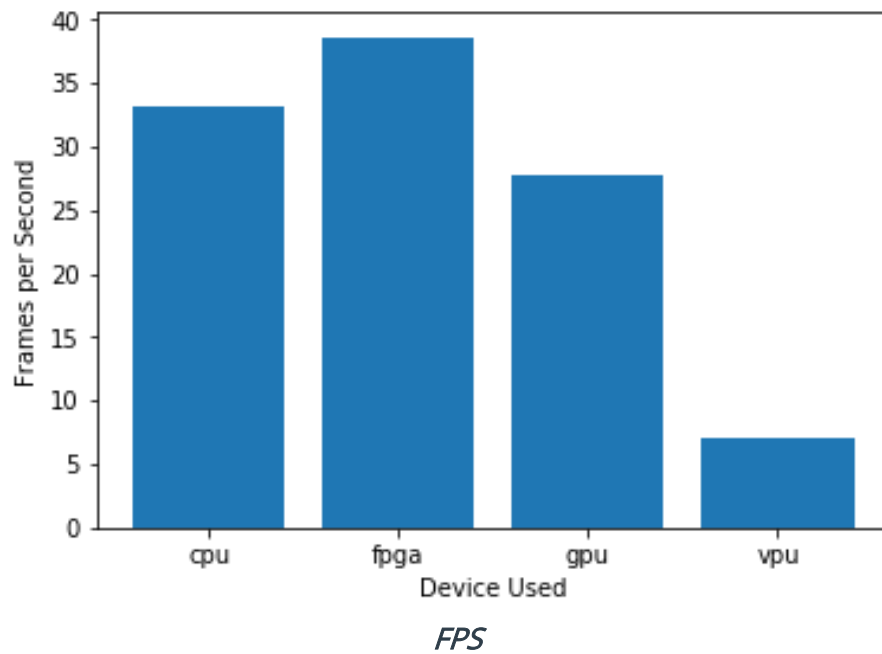| Maximum number of people in the queue	The max number of people in the queue is 5
Model precision chosen (FP32, FP16, or Int8)	*FP32*

Test Results

After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).

Model Load Time

Inference Time

FPS

Final Hardware Recommendation

Now synthesize your points from above and provide a brief write-up describing why the chosen hardware is the best choice for this scenario. Be sure to discuss the client's requirements, the test results, and how these relate to one another (e.g., perhaps one of the devices performed better than the rest, but does not meet one of the client's requirements).

Write-up: Final Hardware Recommendation
The IGPU is the right decision. The inference time is only slightly worse than with the FPGA. The client has no additional money and the IGPU is not fully occupied. Considering the existence of IGPU integrated into the i7 core processor, and the power consumption constraint needed, still IGPU is the most candidate choice.

Scenario 3: Transportation

Client Requirements and Potential Hardware Solution

Look through the scenario and find any relevant client requirements. Then, suggest a potential hardware type and explain how this hardware would satisfy each of the requirements.

UDACITY

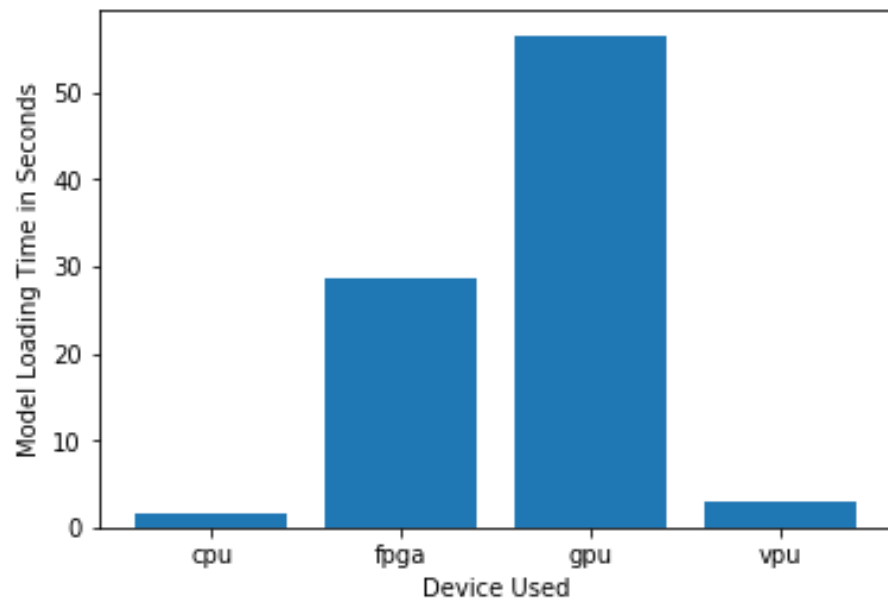| Which hardware might be most appropriate for this scenario?
(CPU / IGPU / VPU / FPGA) |
| --- |
| *VPU* |

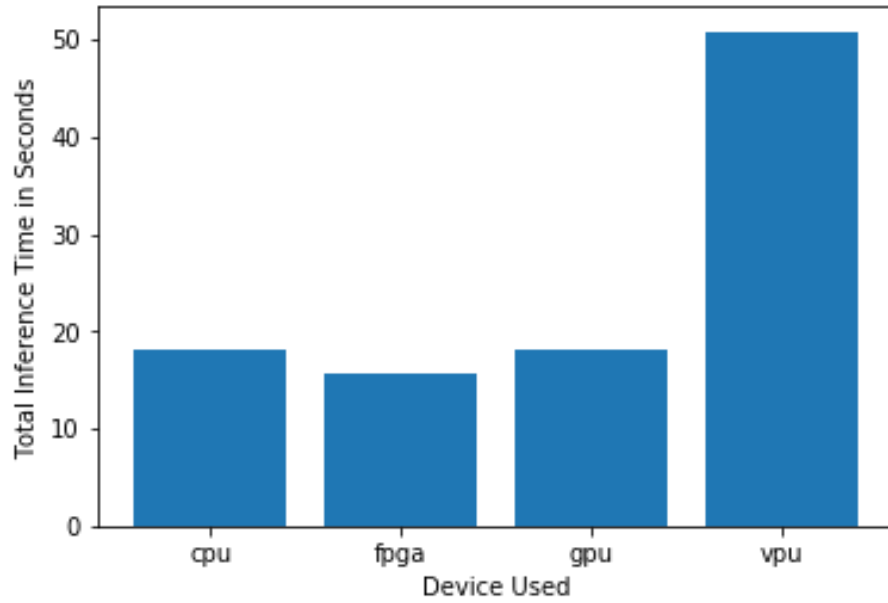| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
The main problem is the low budget. 300$ per machine.	*So the possibilities would be CPU and VPU*
However, no additional computing power is available.	*The VPU is therefore the only choice.*
The job does not need a top speed.	*The VPU fits perfectly.*
The client wants to monitor the situation with 7 cameras. If a VPU becomes too slow for this purpose, multiple VPUs are possible, and yet the price is good.	*If a VPU becomes too slow for this purpose, multiple VPUs are possible, and still it would fit the price range for the client.*

Queue Monitoring Requirements

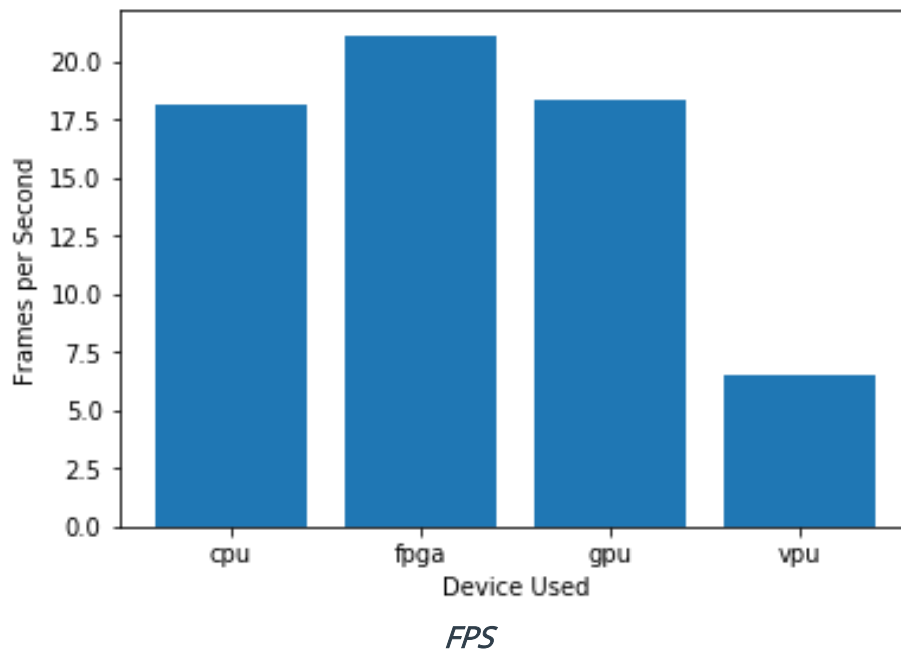| Maximum number of people in the queue	The max number of people in the queue is 7
Model precision chosen (FP32, FP16, or Int8)	*FP 16*

Test Results

After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).

Model Load Time

Inference Time

FPS

Final Hardware Recommendation

Now synthesize your points from above and provide a brief write-up describing why the chosen hardware is the best choice for this scenario. Be sure to discuss the client's requirements, the test results, and how these relate to one another (e.g., perhaps one of the devices performed better than the rest, but does not meet one of the client's requirements).

Write-up: Final Hardware Recommendation
The VPU is the only choice. FPGA did better, but because it is too expensive, we choose VPU. Since the customer wants to monitor 7 cameras, multiple VPUs can be used with the multi-device plugin and still meet the customer's price range.