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)
I would recommend FPGA to the client.

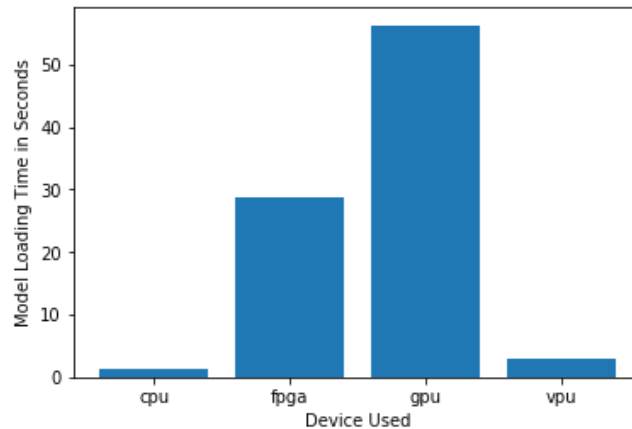| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
As mentioned in the document, they have cameras that record video at 30-35 FPS. This video stream should then be used in the image processing task being completed five times per second.	*From all possible options FPGA has the best speed.*
It was also mentioned that there are several problems, and the client would like to reuse the system to resolve the different issue.	*FPGA can be reprogrammed.*
As mentioned, the client would ideally like it to last for at least 5-10 years.	*FPGA is durable. It can work 24/7 also by some higher temperatures. Therefore, it would fulfill these requirements.*

Queue Monitoring Requirements

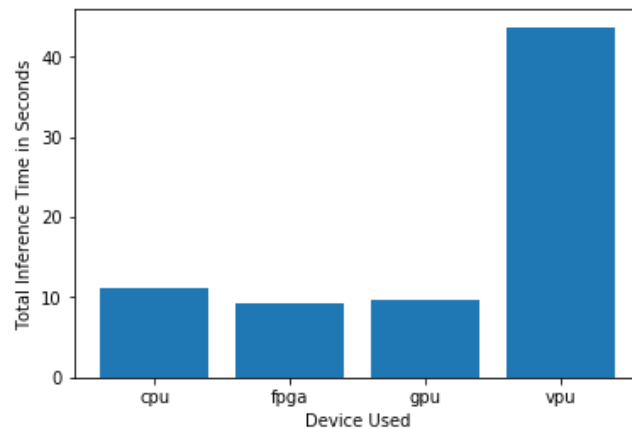|	
Maximum number of people in the queue	*5*
Model precision chosen (FP32, FP16, or Int8)	*FP16*

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).
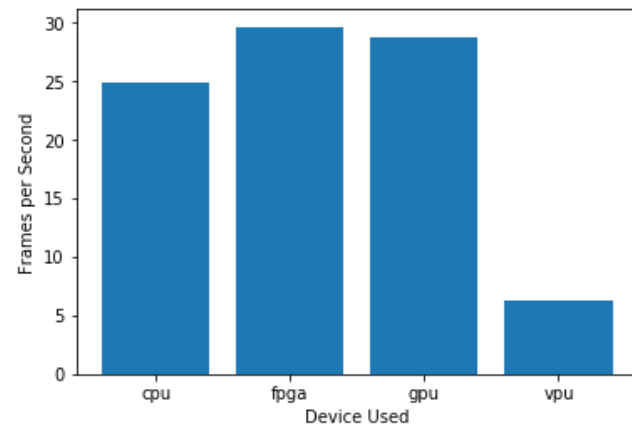
Model Load Time

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
Seeing the results, we can say that FPGA has the best performance. Since it is faster in loading and inference, as well as meets all requirements, this would remain as the optimal option for the specified client.

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.

Which hardware might be most appropriate for this scenario? (CPU / IGPU / VPU / FPGA)
I would recommend IGPU to the client.

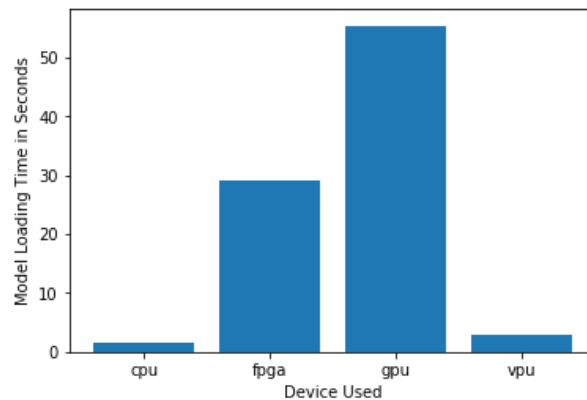| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
As mentioned in the use case, the net profit of the business is only about 1.1%, so the company wants to have the cheapest solution.	*Using IGPU will help to save money on additional hardware.*
The client wants to save money on the electric bills.	*IGPU offers adjustable power consumption.*

Queue Monitoring Requirements

Maximum number of people in the queue	*5*

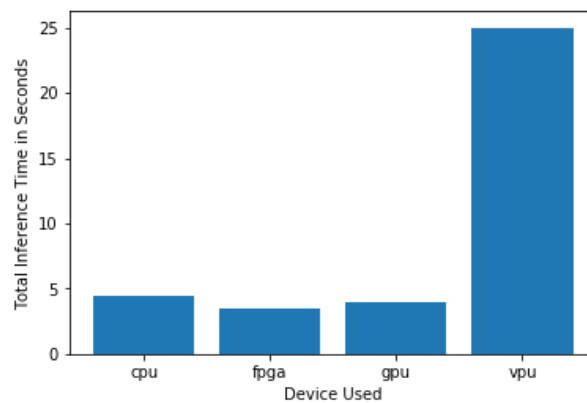| Model precision chosen (FP32, FP16, or Int8)	*FP16*

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).
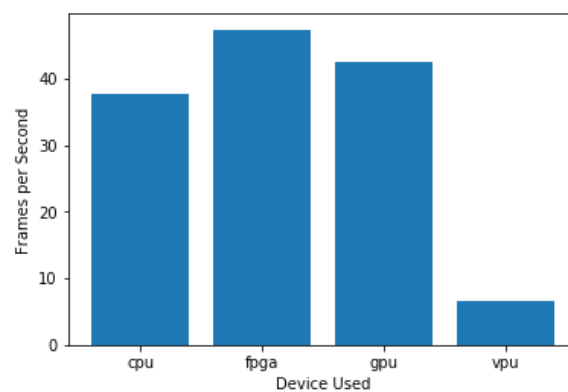
Model Load Time

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
Though the model loading time is higher than by other models, it is still the cheapest solution, and does it works as required. Therefore, IGPU is still the optimal solution.

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.

Which hardware might be most appropriate for this scenario? (CPU / IGPU / VPU / FPGA)
I would recommend VPU to the client.

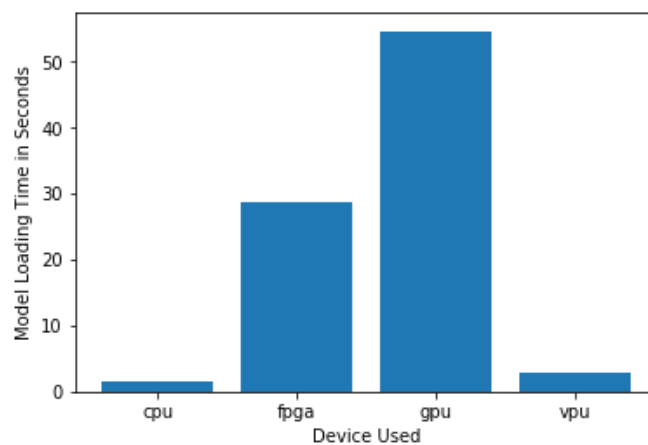| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
As mentioned in the requirements, Ms. Leah's budget allows for a maximum of $300 per machine.	*For these money Ms. Leah can buy three VPU devices.*
The entire situation is monitored with 7 CCTV cameras on the platform.	*VPU is a good match, since it has accelerated image processing.*
The client would like to save as much as possible both on hardware and future power requirements.	*In comparison to other devices, VPUs have a low power usage.*

Queue Monitoring Requirements

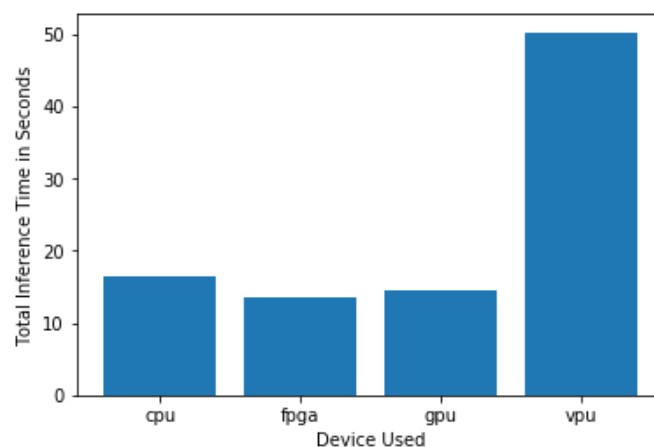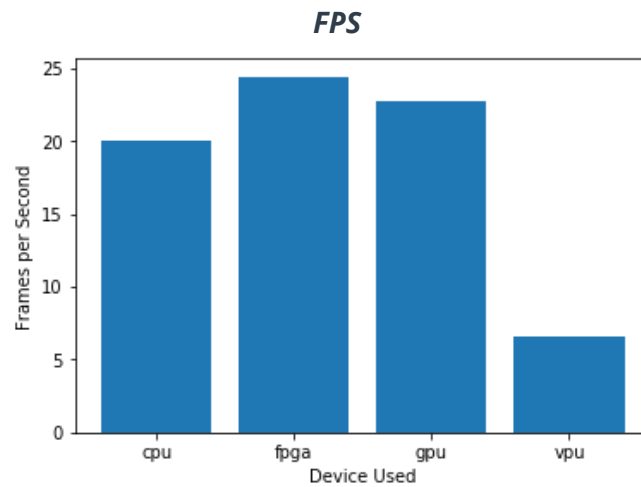| Maximum number of people in the queue	15
Model precision chosen (FP32, FP16, or Int8)	FP16

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
For this use case VPU remains the optimal choice, though it's FPS is lower than by other devices.