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 is most appropriate for this scenario

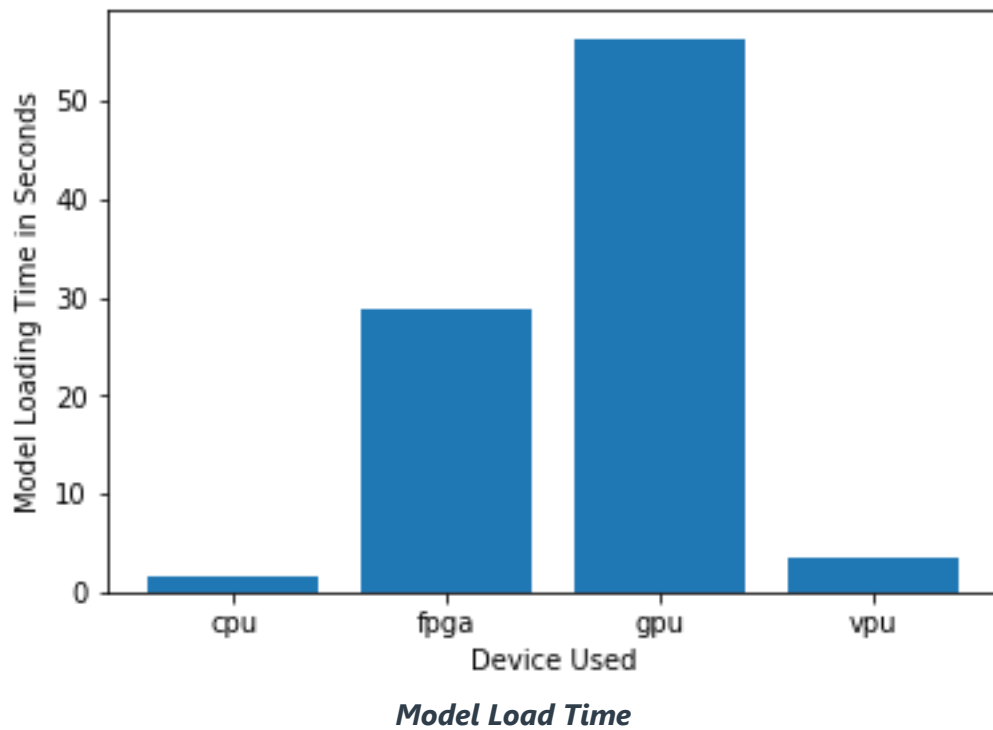| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
Mr. Vishwas wants a system to monitor the number of people in the factory line for 24 hours	FPGAs are designed to have 100% on-time performance, meaning they can be continuously running 24 hours a day, 7 days a week, 365 days a year.
Mr. Vishwas wants system can be reprogrammed and optimized to quickly detect flaws in different chip designs.	FPGAs are flexible and they are field-programmable
Mr. Vishwas wants system works 10 years	FPGAs have a long lifespan and it is 10 years

Queue Monitoring Requirements

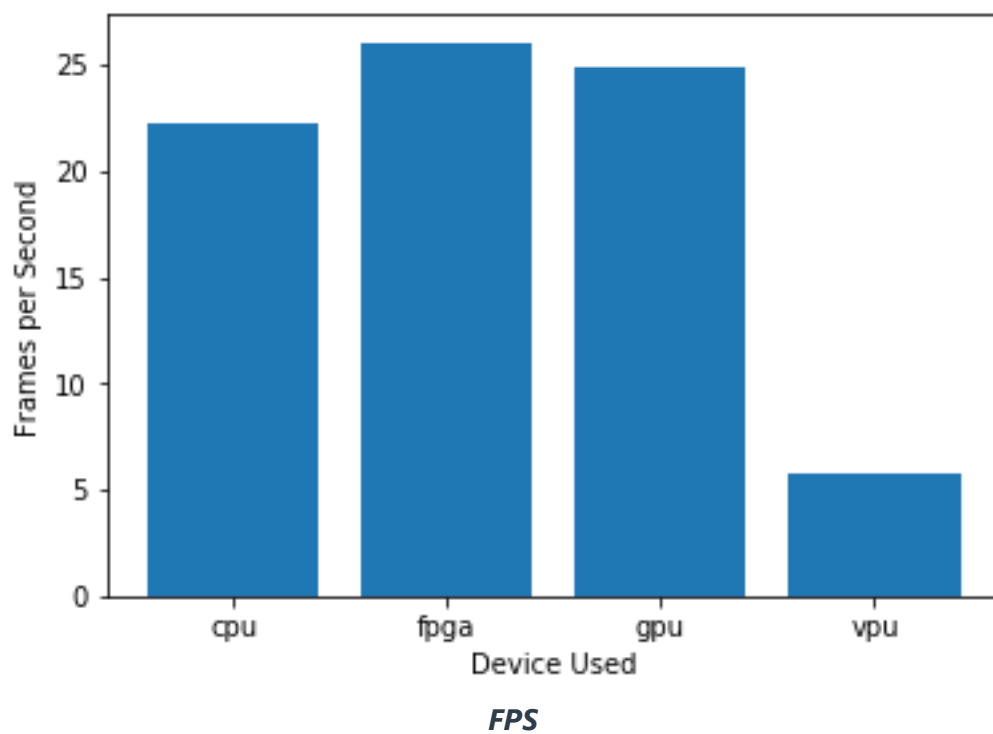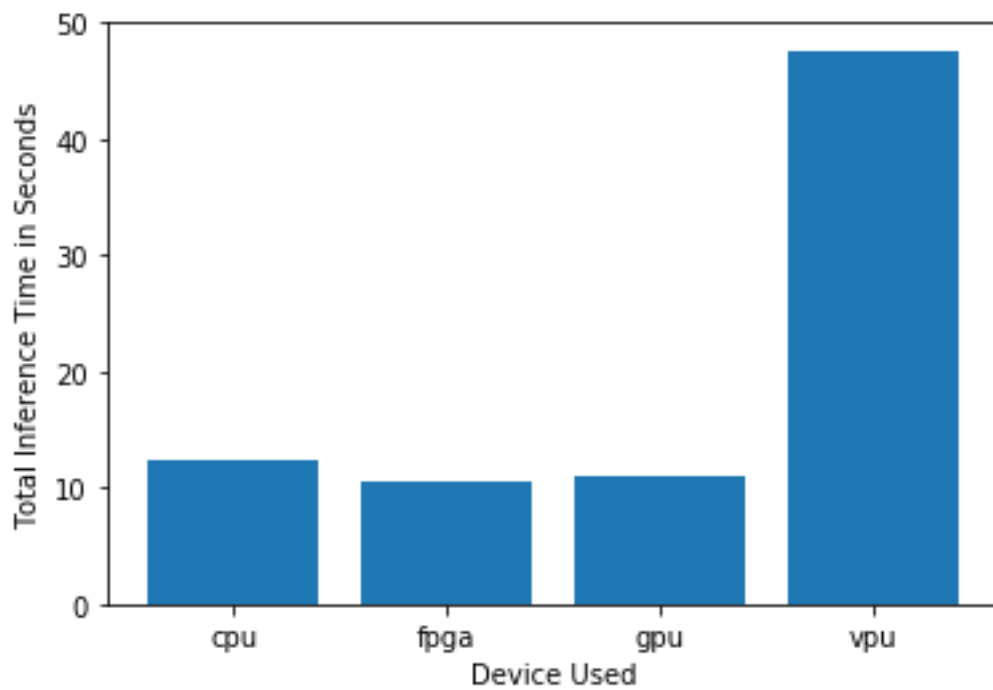| Maximum number of people in the queue	*5*

UDACITY

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

UDACITY

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
In this case, FPGA is great choice because client requires system works for 24 hours, be reprogrammable and works at least 10 years. Also, test results show FPGA is good for this scenario

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.

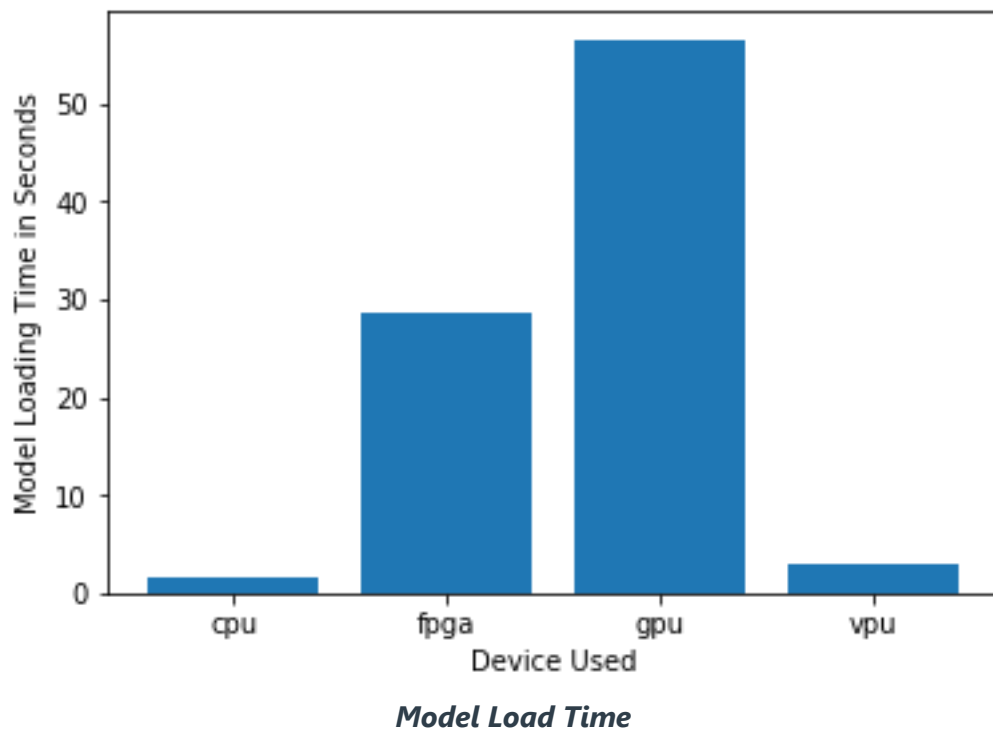| Which hardware might be most appropriate for this scenario? (CPU / IGPU / VPU / FPGA) |
| --- |
| *Mr. Lin store has Intel i7 CPU and this hardware is enough for this scenario, also this CPU has integrated GPU and IGPU generally can handle a much larger number of processes at once, if is needed* |

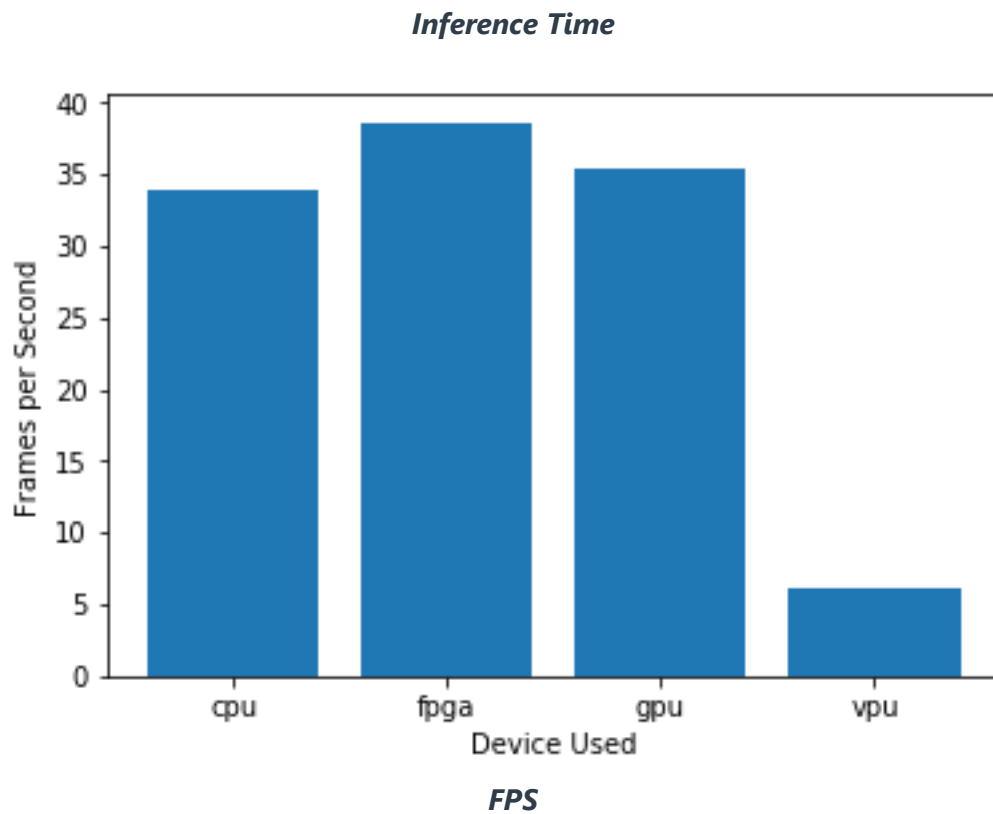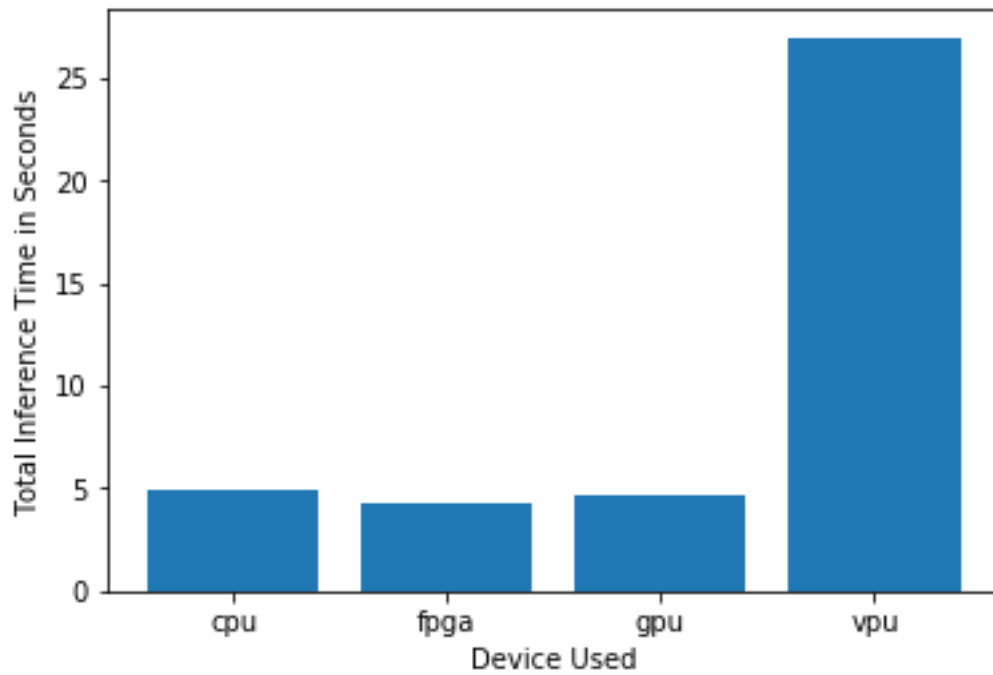| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
Mr. Lin wants Edge AI system directs people to less-congested queues in the rush hour	CPU is ideal for this case because CPU can handle one process very well
Mr. Lin does not have much money to invest in additional hardware	Mr. Lin store's checkout counters already has Intel i7 CPU
Mr. Lin would like to save as much as possible on his electric bill	CPU uses less power than IGPU

Queue Monitoring Requirements

Maximum number of people in the queue	3
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

UDACITY

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
In this scenario, user needs system directs people to less-congested queues in the rush hour and user wants system uses low power, also user does not have money to invest on new hardware. In addition, user has CPU and we can see CPU is good choice in test results

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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.

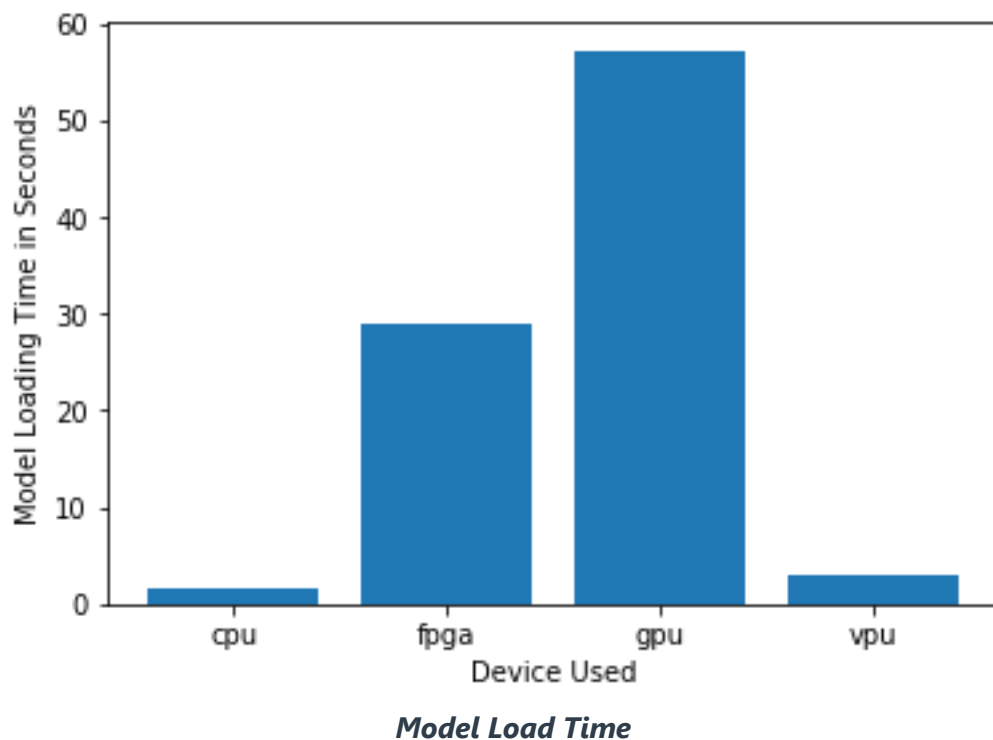| Which hardware might be most appropriate for this scenario?
(CPU / IGPU / VPU / FPGA) |
| --- |
| *If user's machine contain CPU which is supported by OpenVINO, IGPU would be fit for this case but if CPU is older generation, VPU is most appropriate for this case because VPU uses low power and it's price is only about $100* |

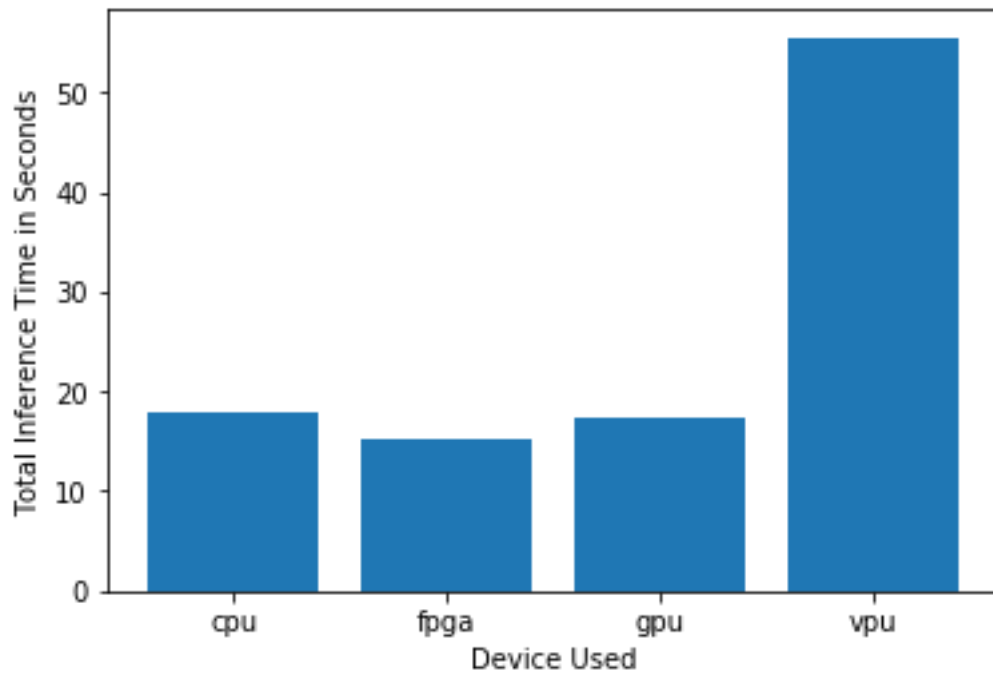| Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
Ms. Leah only have $300 for per machine	VPU' price is about $100, as a result, she can buy two or three of them or she can buy new CPU in around $200
Ms. Leah would like to save as much as possible on future power requirements	VPU uses low power

Queue Monitoring Requirements

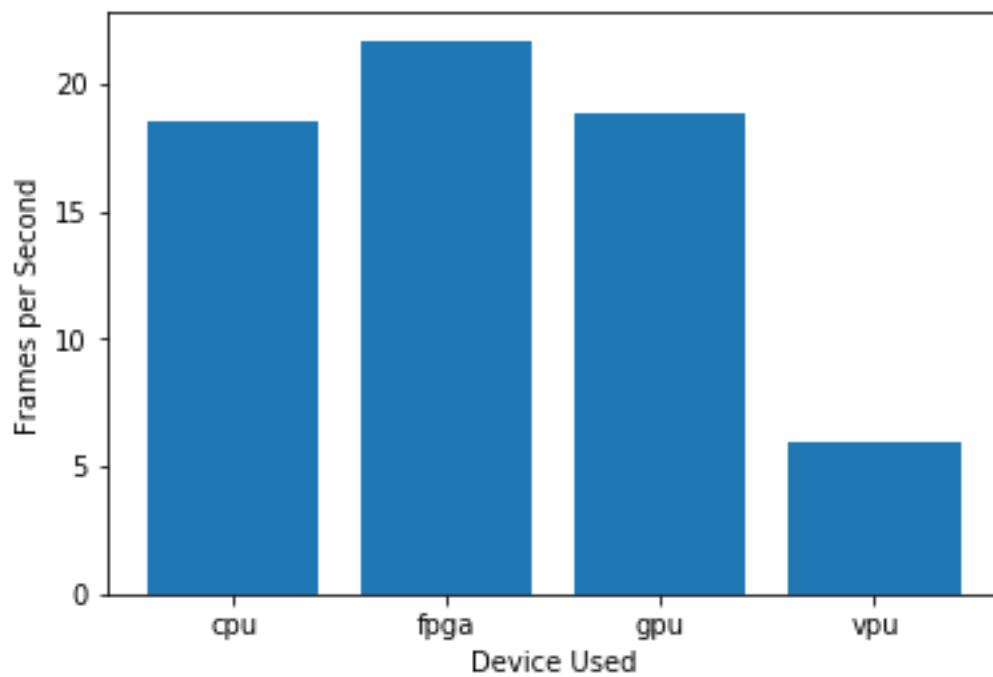| Maximum number of people in the queue	*4*
Model precision chosen (FP32, FP16, or Int8)	*FP16*

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
In last scenario, user has machine for security purposes because of that we can use VPU for increase performance for directing passengers to less congested areas during peak time but test results depict VPU is not good enough for this scenario because lower FPS and Inference Time. There is a solution, user has $300 for new hardware, as a result, we can buy three VPU or new CPU