

# Choose the Right Hardware

## Proposal Template

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### 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>The appropriate hardware is FPGA</i>

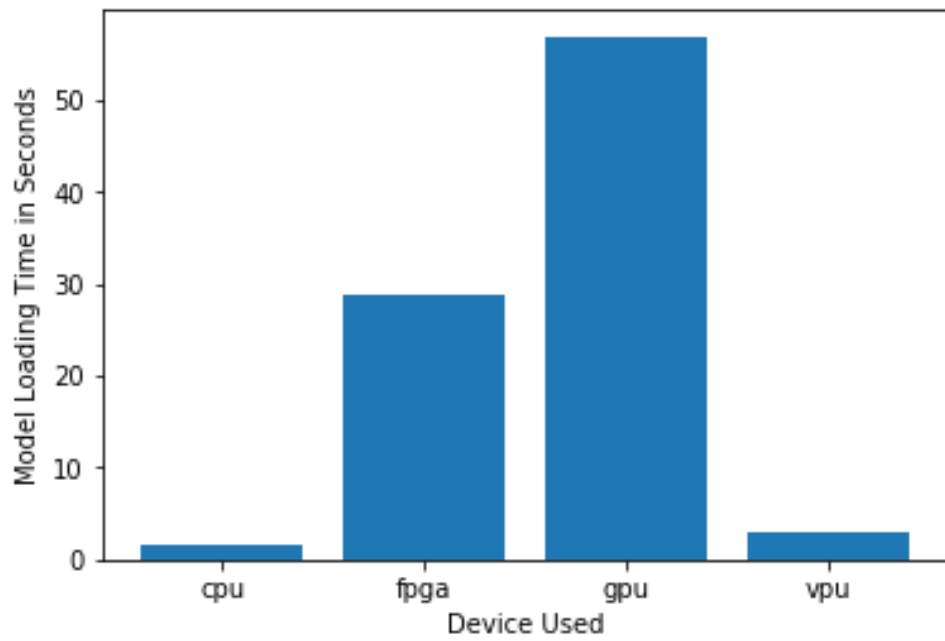
Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Customer requires a machine that has a long life (5-10 years)	The FPGA has a guaranteed useful life of 10 years
customer requires hardware that can run non-stop	The FPGA can work continuously without interruption

#### Queue Monitoring Requirements

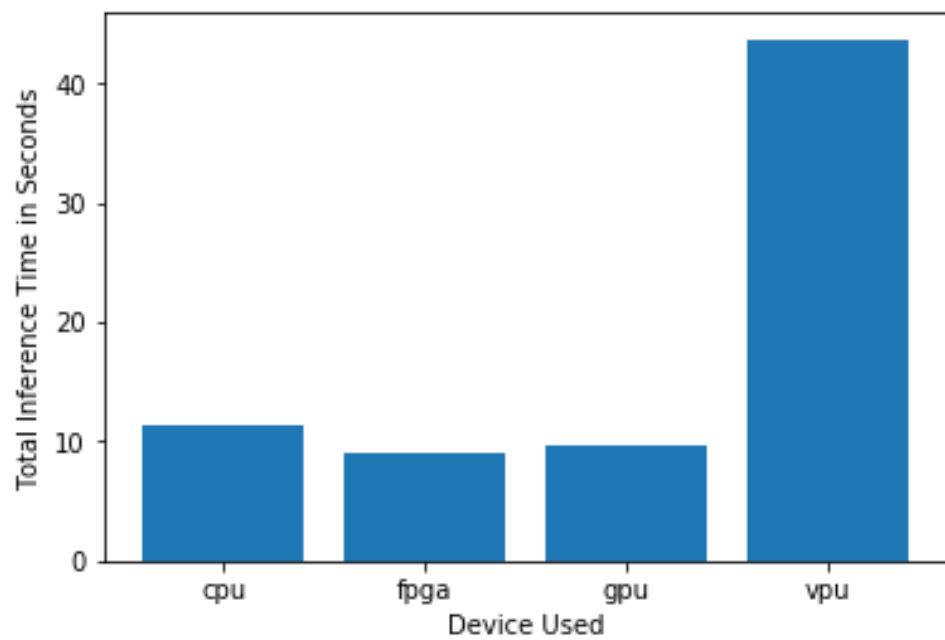
Maximum number of people in the queue	5
Model precision chosen (FP32, FP16, or Int8)	FP16

#### Test Results

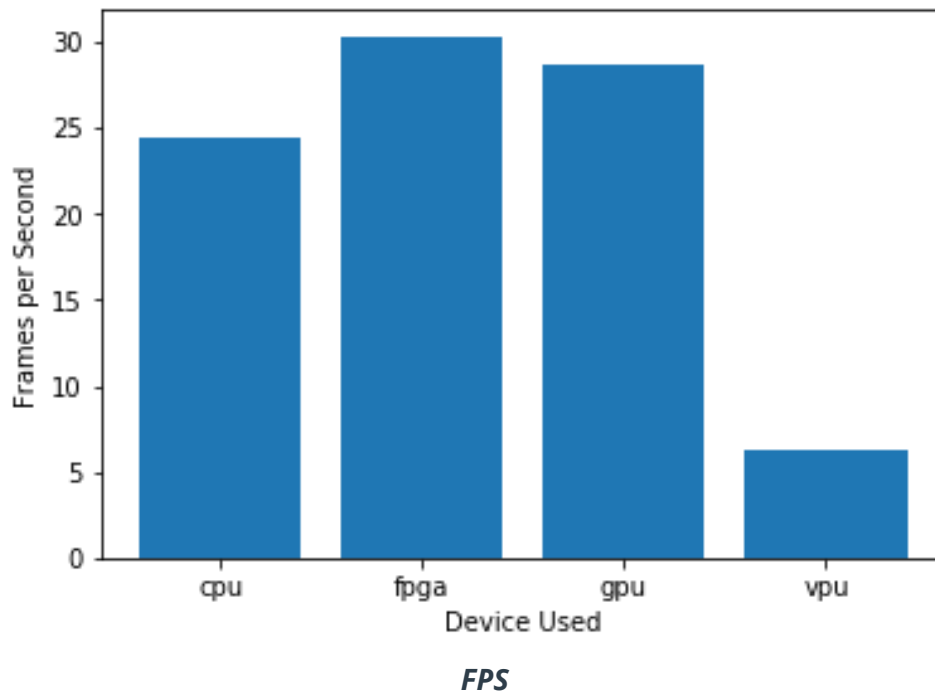
After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).



***Model Load Time***



***Inference Time***



## 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 It is the most powerful hardware as seen in the graphics, almost reaches 30 frames per second, and the specifications provided by the client are already satisfied like the durability and work continuously without interruption, and according to the client's description, the budget will not be a 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.

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

*The appropriate hardware is CPU*

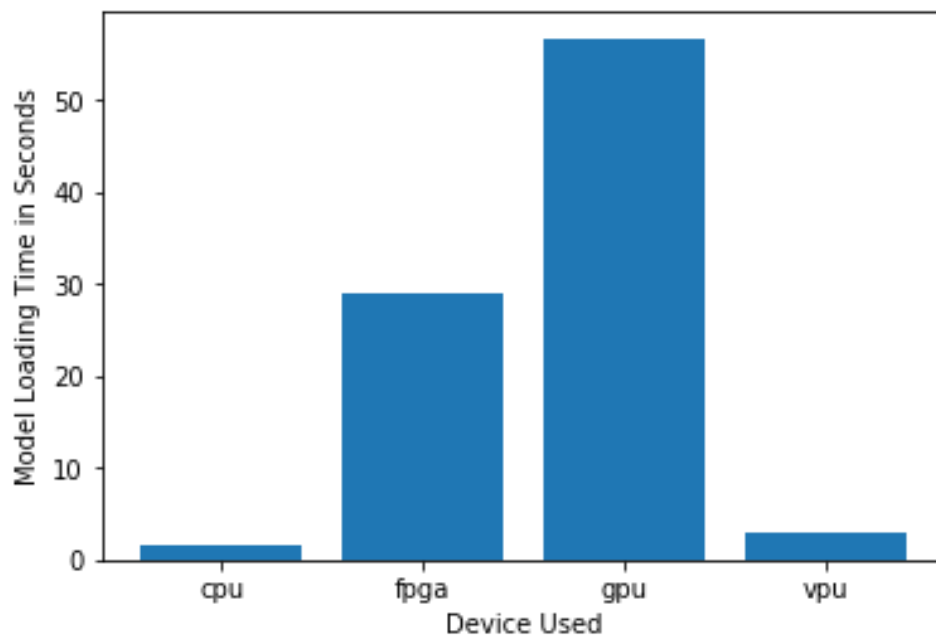
Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
The client has a tight budget for hardware	The client owns computers with I7 each, and the tasks they carry out are not computationally demanding, so it is best to use the remaining computational power
The client needs to take care of the energy consumption	Intel CPUs are adjustable in power consumption

## Queue Monitoring Requirements

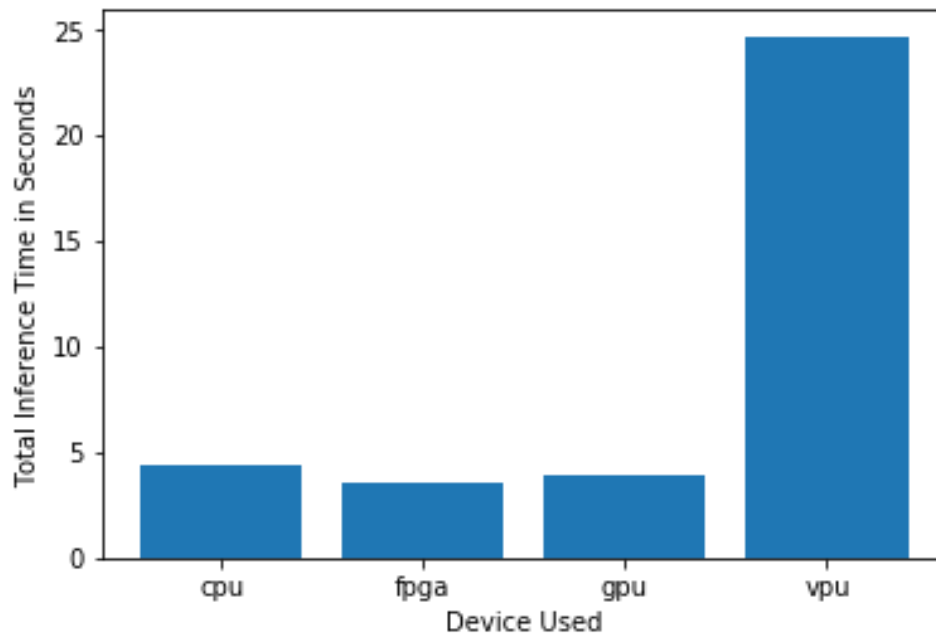
Maximum number of people in the queue	5
Model precision chosen (FP32, FP16, or Int8)	FP16

## Test Results

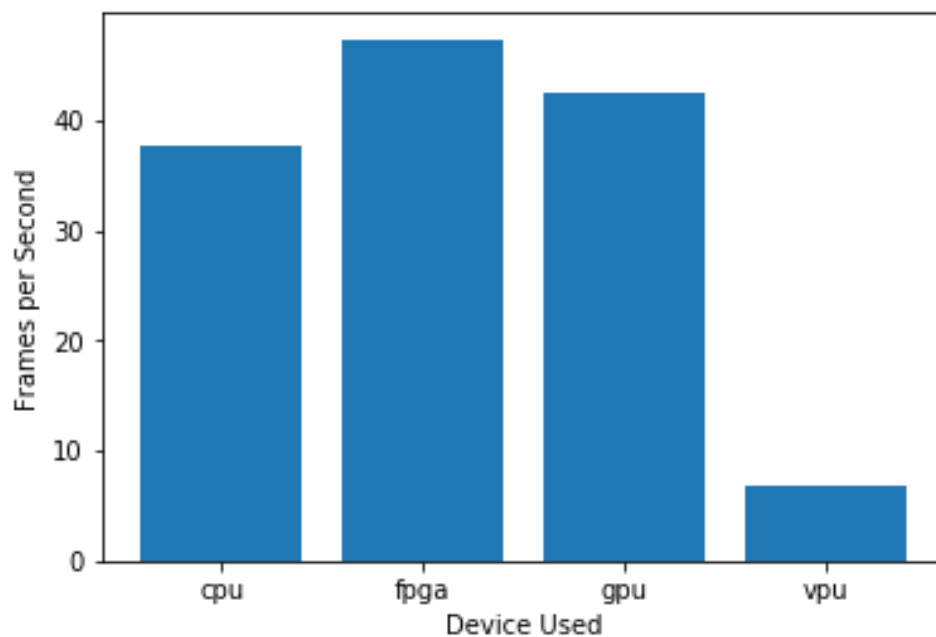
After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).



**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

*The best option is to use the I7 CPUs that the client owns, since they are not using the full computing potential of the I7 and that would save the cost of buying new hardware.*

## 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)
The appropriate hardware is VPU

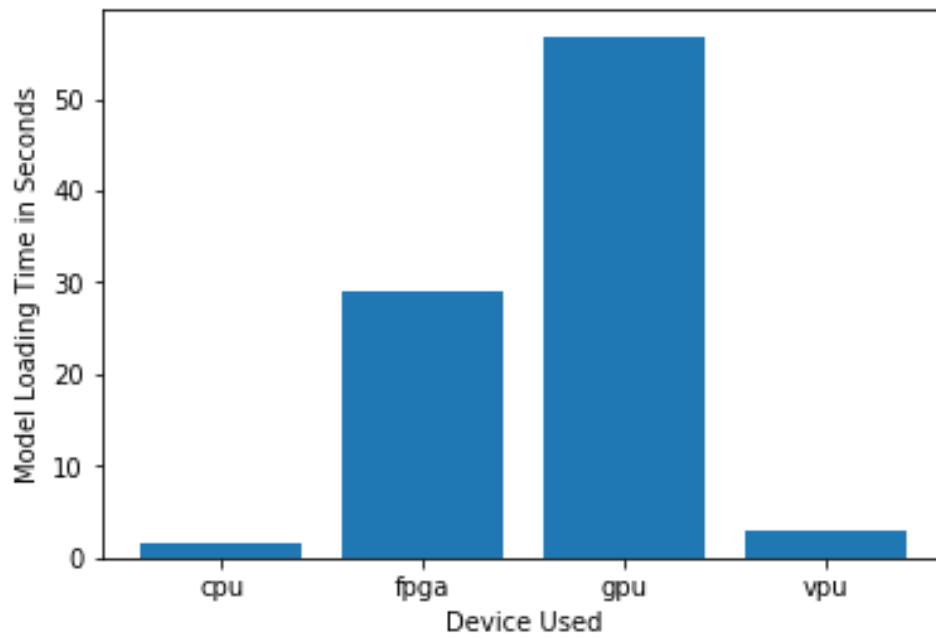
Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Their budget is about \$300 for each device.	Compared to other AI accelerators, the VPU is an inexpensive option, typically costing around \$ 70 to \$ 100.
Customer requires extra computational power for inference	The VPU are specific for a significant increase in computing power without costing much and without having to buy unnecessary extra equipment

### Queue Monitoring Requirements

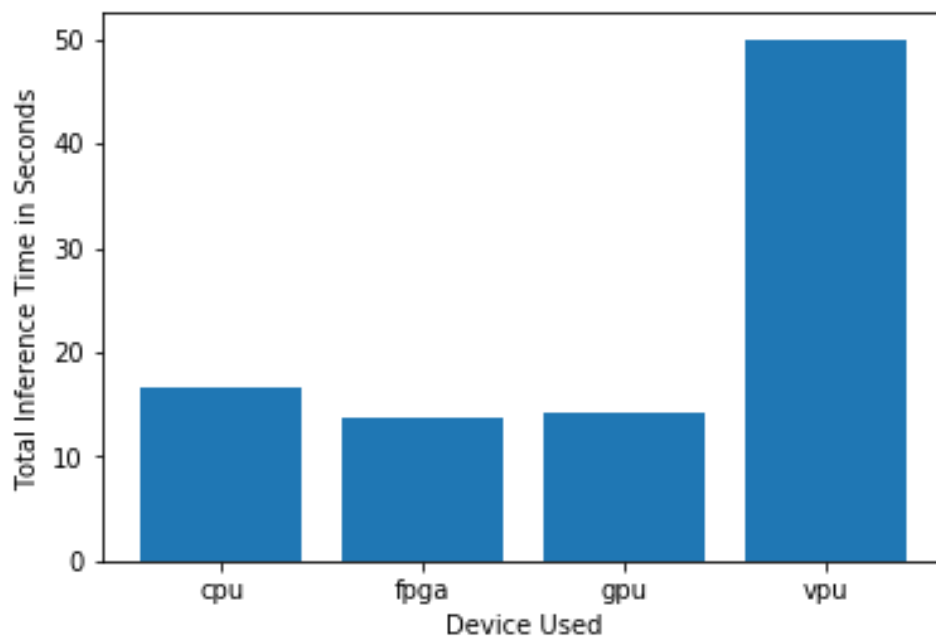
Maximum number of people in the queue	15
Model precision chosen (FP32, FP16, or Int8)	FP16

### Test Results

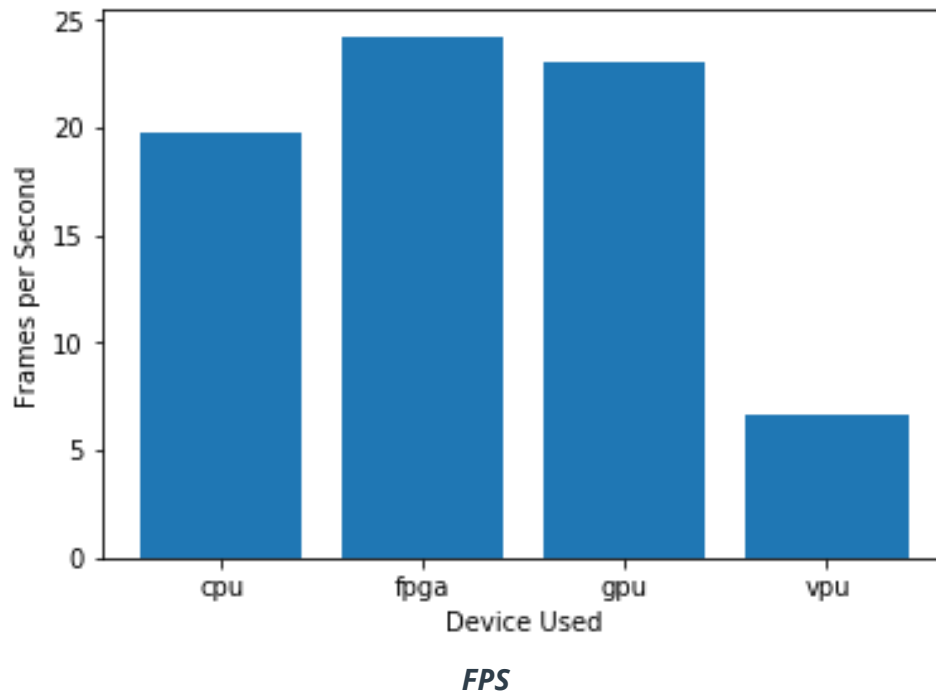
After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).



***Model Load Time***



***Inference Time***



## 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 client needs to increase their computing power with a budget of \$ 300 per machine, so the vpu are the best option, since they fall within the price range, and consume little energy*