

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>CPU</i>

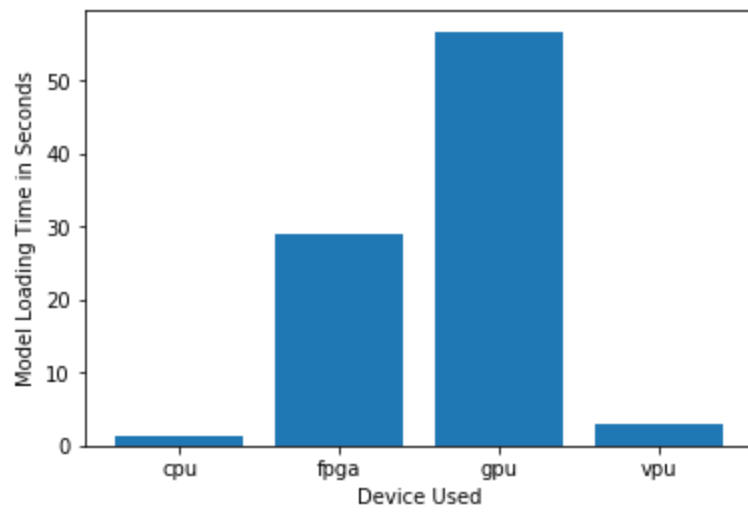
Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
<i>Flexible & reconfigurable</i>	<i>CPU has both of those that is they are flexible and reprogrammable</i>
<i>Life of 5-10 years</i>	<i>CPU have a life of 5-10 years</i>
<i>FPS = 5</i>	<i>The CPUs are capable of processing images at this FPS</i>

Queue Monitoring Requirements

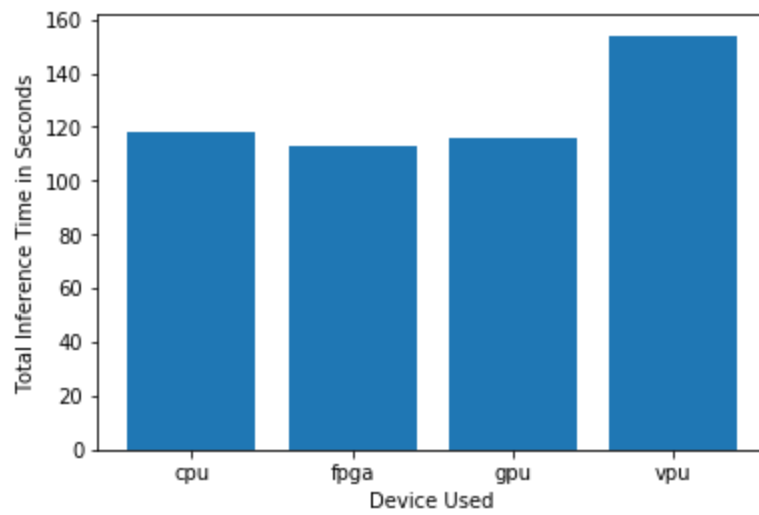
Maximum number of people in the queue	<i>10</i>
Model precision chosen (FP32, FP16, or Int8)	<i>FP16</i>

Test Results

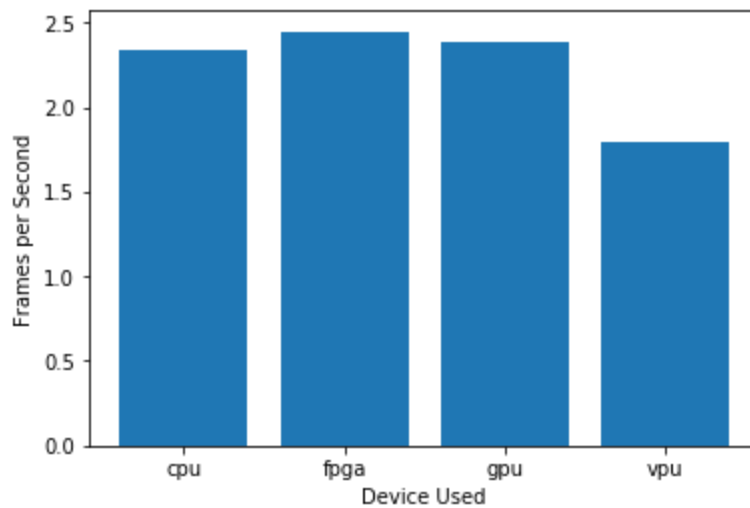
After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).



Model Load Time



Inference Time



FPS

Final Hardware Recommendation

Write-up: Final Hardware Recommendation

The user should go for the CPU, as it is the only reconfigurable and has a good life span. The FPS may seem lower than the other potential choice i.e., the GPU, but the user already has good CPU and need not invest for GPUs for just a minor boost in performance.

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)

CPU

Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
<i>Low Cost / No revenue</i>	<i>CPU and VPUs are the cheapest solution out of all the options he has.</i>

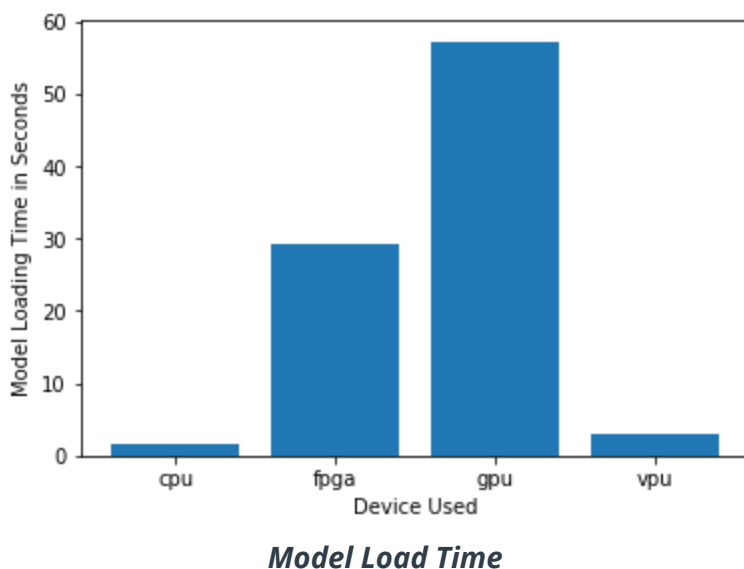
<i>Already has i7 systems</i>	<i>The current systems are capable of handling such computation. Also, adding VPUs to them would be better as they cost less</i>
<i>Low Power</i>	<i>After VPUs, the CPU is the lowest power solutions he can have</i>

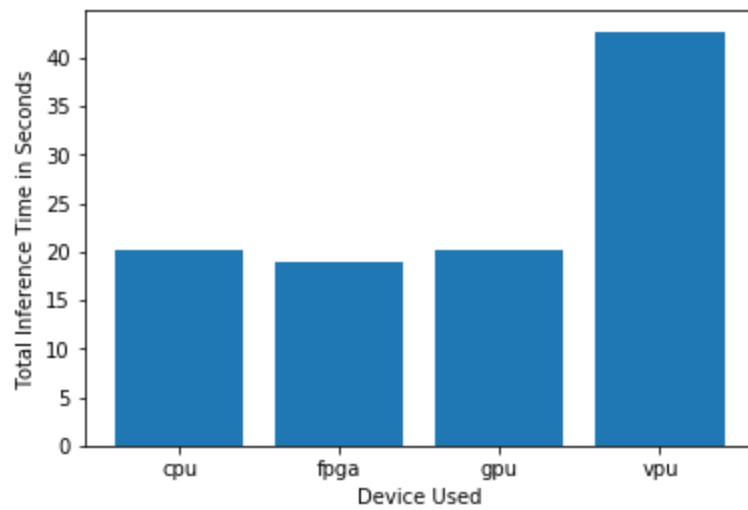
Queue Monitoring Requirements

Maximum number of people in the queue	2-5
Model precision chosen (FP32, FP16, or Int8)	FP16

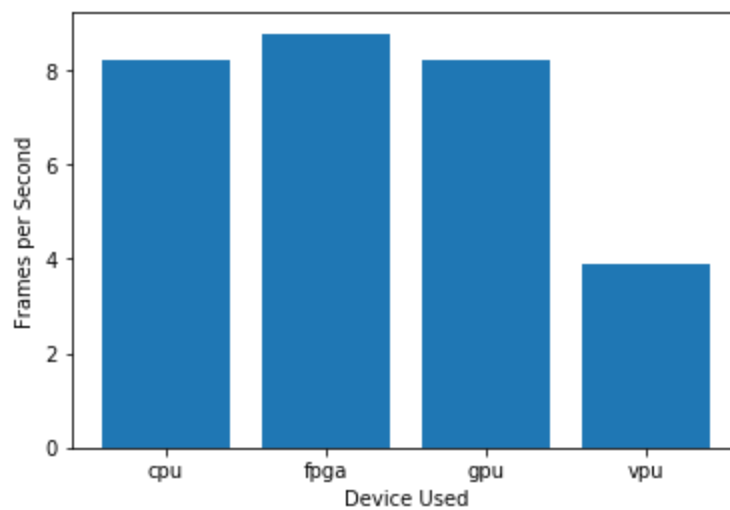
Test Results

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).





Inference Time



FPS

Final Hardware Recommendation

Write-up: Final Hardware Recommendation

The client already has systems good enough to tackle his problem. Also, it would not cost him anything, except a little power.

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.

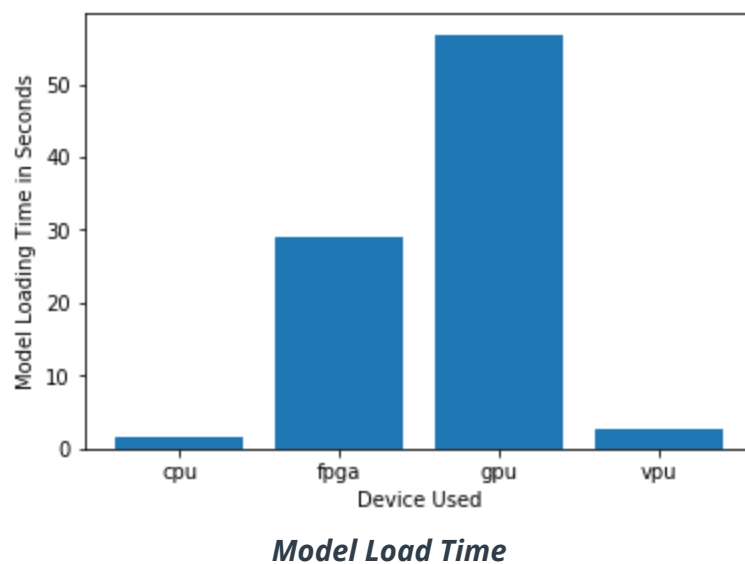
Which hardware might be most appropriate for this scenario? (CPU / IGPU / VPU / FPGA)
IGPU

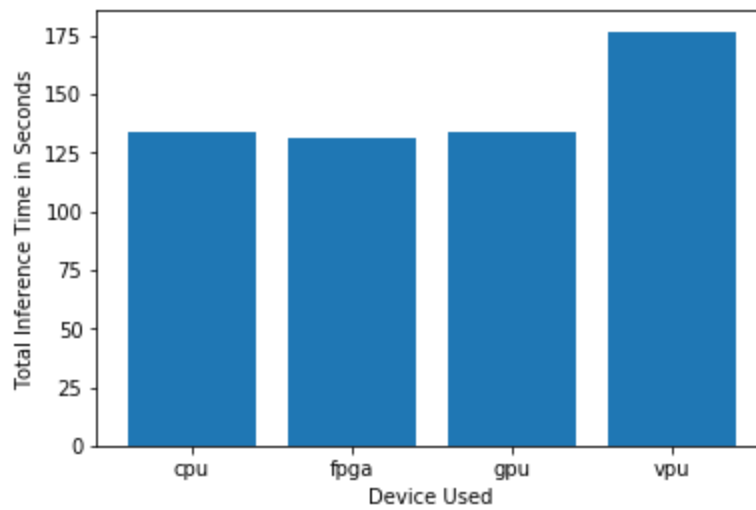
Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
No CPU available	The client needs a minimum of a CPU for his system setup; IGPU would come as a included feature
Good Budget	With a good budget of \$300 per machine, it would be affordable to go for an IGPU along with the CPU he would buy.
Save on Hardware and Budget	Going for higher end solutions like FPGA, would violate this requirement

Queue Monitoring Requirements

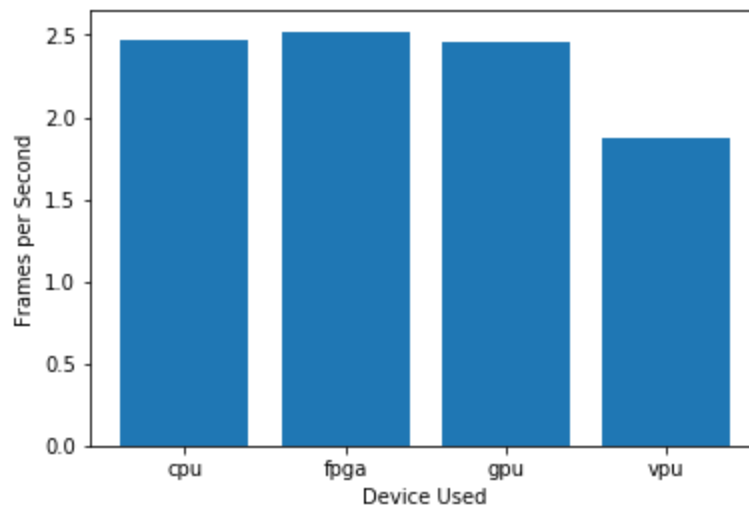
Maximum number of people in the queue	7
Model precision chosen (FP32, FP16, or Int8)	FP16

Test Results





Inference Time



FPS

Final Hardware Recommendation

Write-up: Final Hardware Recommendation

The IGPU provides desirable performance at a reasonable price. The FPS and inference time are the best one could get at a fixed cost.