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 / GPU / VPU / FPGA)
VPU-> potential competent and cost effective

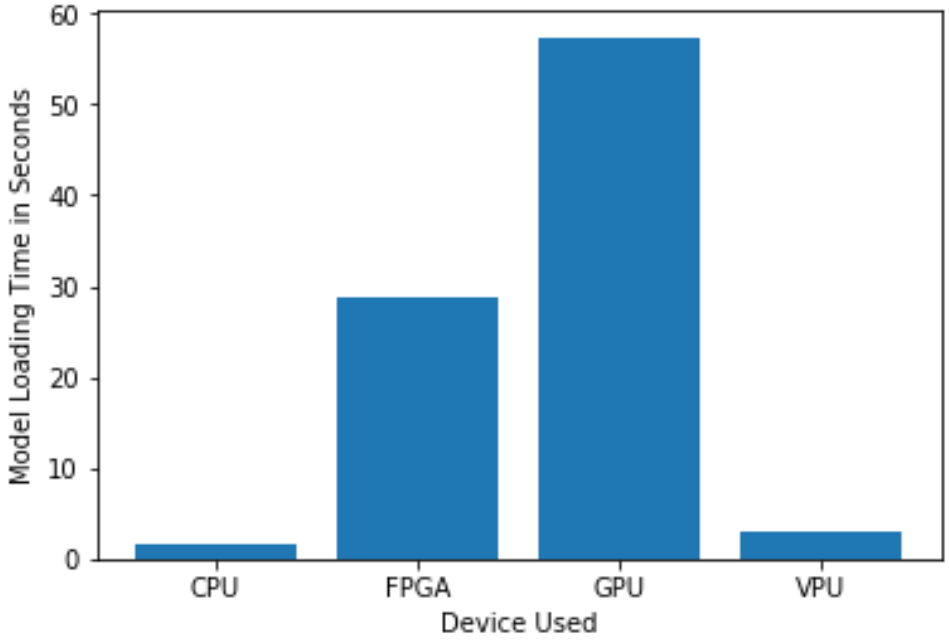
Requirement Observed (Include at least two.)	**How does the chosen hardware meet this requirement?**
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
Need of controllable central environment	*Can be easily modified and restructured*
Need of stable performance	*Can be moderated with time*
Monitoring in Autonomous Environment with no certain time duration	CPU's are cost effective setup

Queue Monitoring Requirements

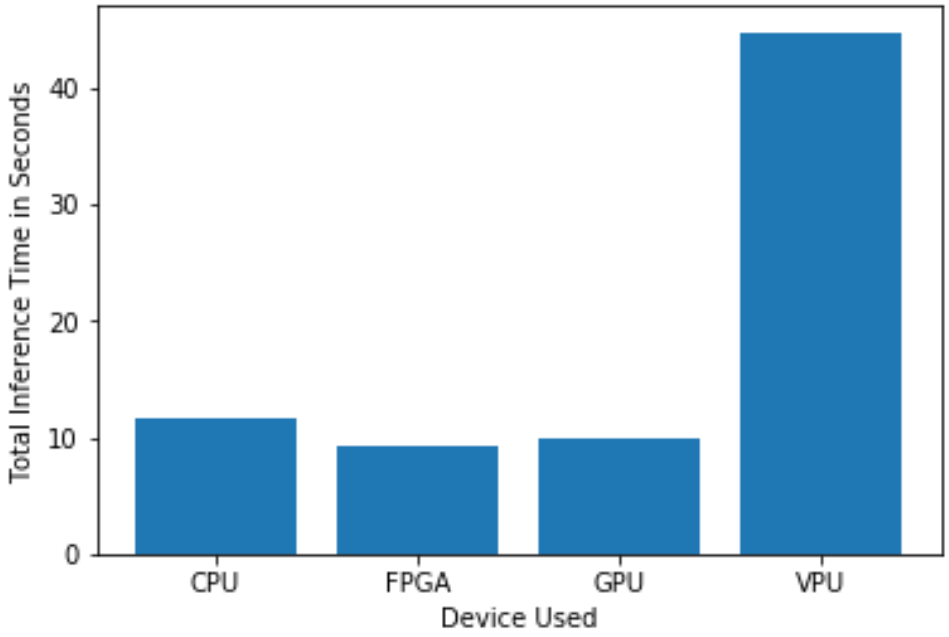
Maximum number of people in the queue	*2*
Model precision chosen (FP32, FP16, or Int8)	*FP16*

Test Results

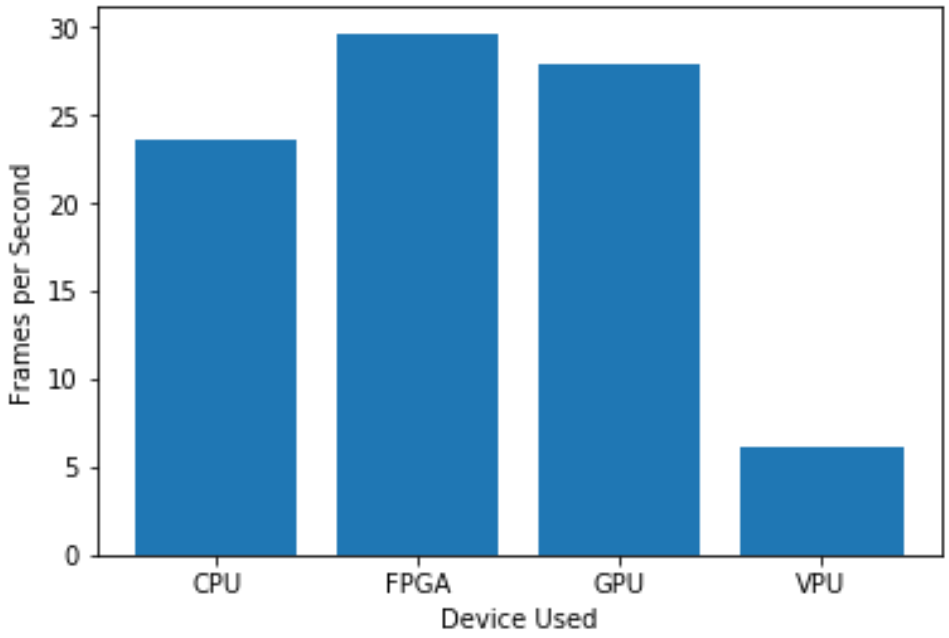
After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).



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
FPGA *-FPGA's are available from $1 to $100* *-Although first takes loading time but once loaded -> great inference time with max FPS available* *-Restructurable time to time as per the employee count changes*

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 / GPU / VPU / FPGA)
FPGA

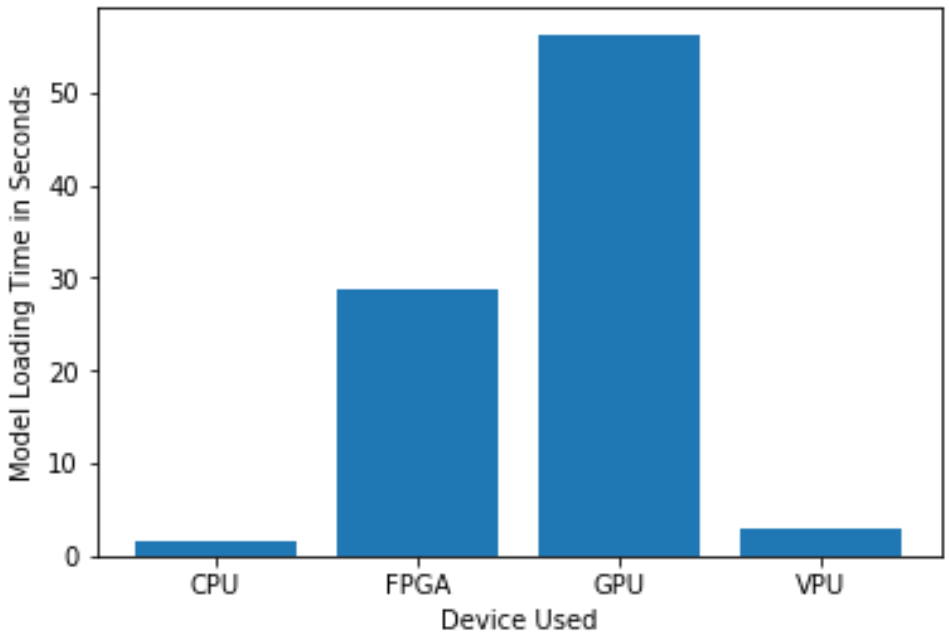
Requirement Observed (Include at least two.)	How does the chosen hardware meet this requirement?
Example requirement: The client requires a tiny device to be connected to their CPU—and their budget is only about $100 for each device.	*Example explanation:* VPU or NCS2 is only about 27.40 mm in size and would fit in the price range.
Need of security	*For regulating safety rules, regulation maintaining complete customer safety in social distancing era*
Higher customer frequency on basis of events	*To deal with customer frequency*
Need of Cost and time effectiveness	*To provide safe customer facility & associative experience will raise customers interest & trust*

Queue Monitoring Requirements

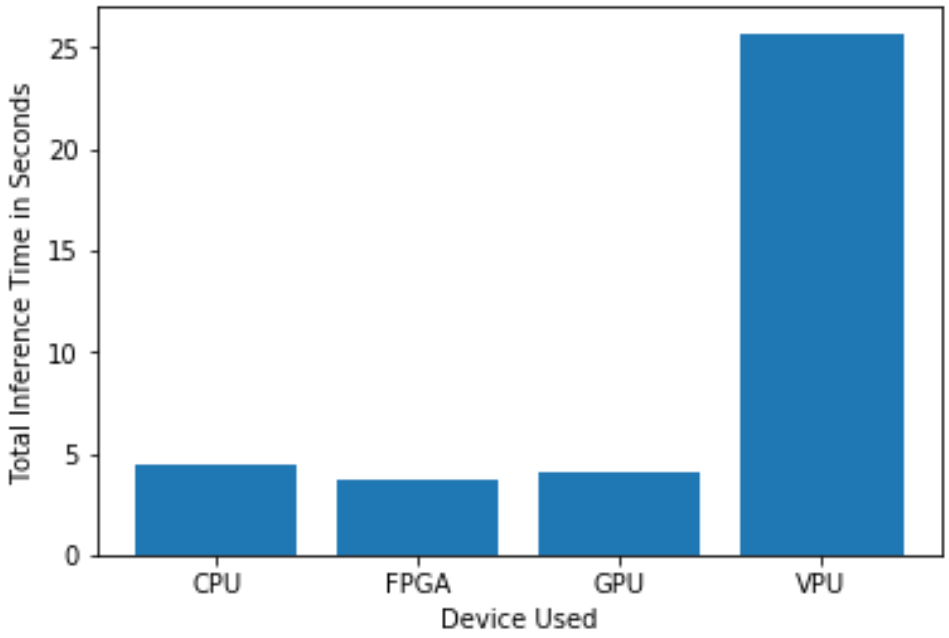
Maximum number of people in the queue	2
Model precision chosen (FP32, FP16, or Int8)	*FP16*

Test Results

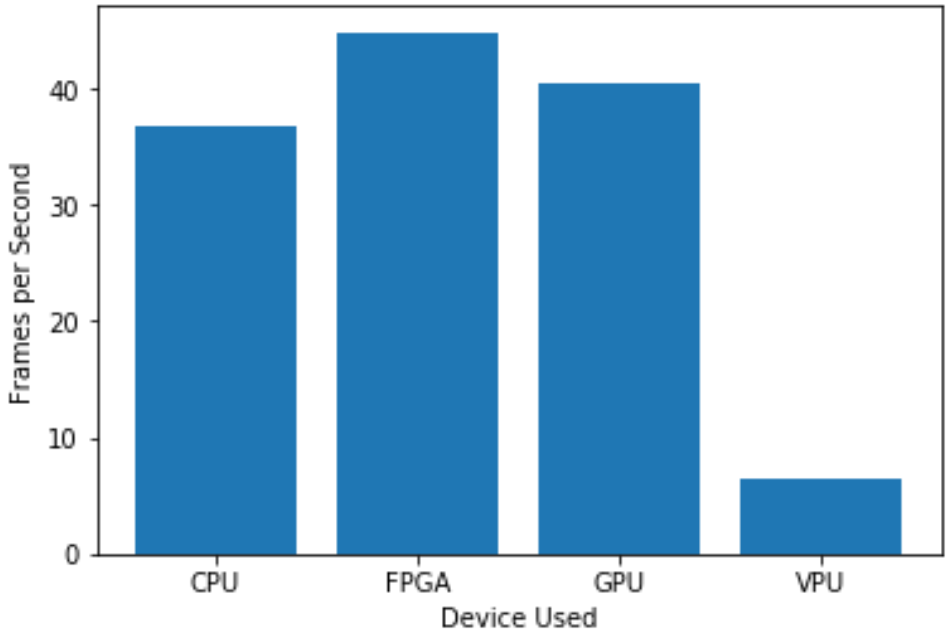
After you've tested your application on all four hardware types (CPU, IGPU, VPU, and FPGA), copy the matplotlib output showing the comparison into the spaces below. You should have three graphs (for model load time, inference time, and FPS).



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

CPU *-Keeping the reviewer's comment in mind, CPU will be a great cost effective alternative to FGPA(various trade-offs needs to be consider) to keep setup in budget* *-Plus point-> lowest model loading time* *-No additional particular setups because counter CPUs can handle job considerably* *-Can perform great inferencing in reasonable FPS* *-presently has fulfilled all three parameter and thus became a prime choice for smooth setup*

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 / GPU / VPU / FPGA)
CPU

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.
Nondeterministic frequency of daily commuters	*Central Hub can manage potentially number of connections to it*
Need to be installed infront of each gate of vehicle especially in this case trains with tens of doors	*Lowest Cost because of need of more than 25 devices to be installed at each station*
Among thousands and even more number of passenger not highest quality screening is required by the department here	*A mere record needed not exact number or figured is required*

Queue Monitoring Requirements

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

Test Results

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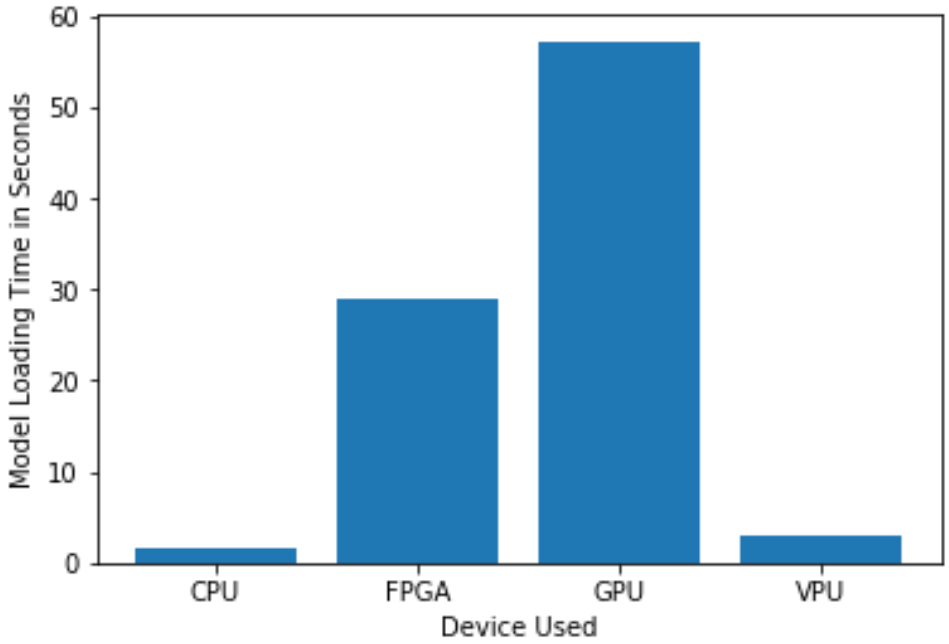
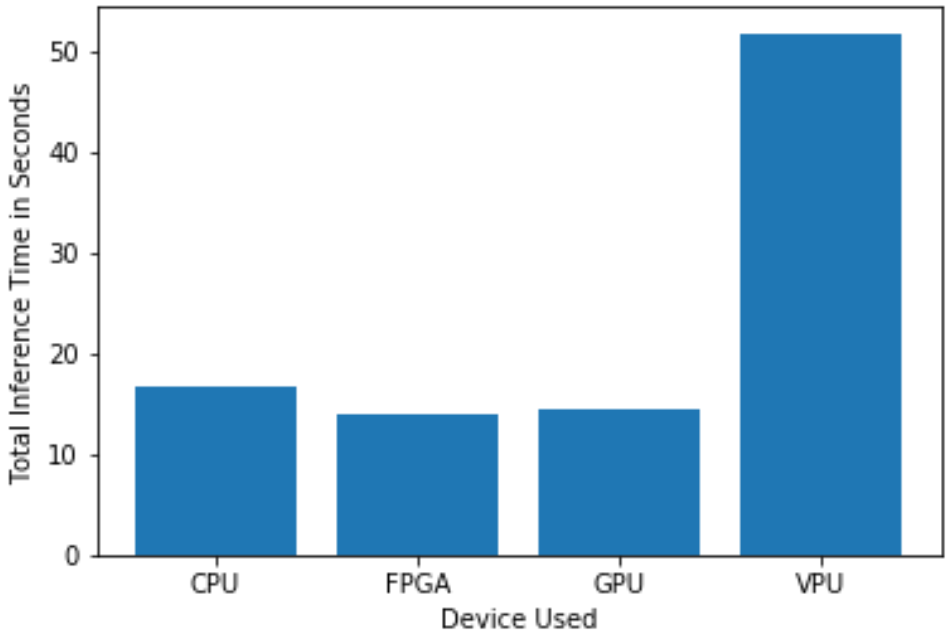
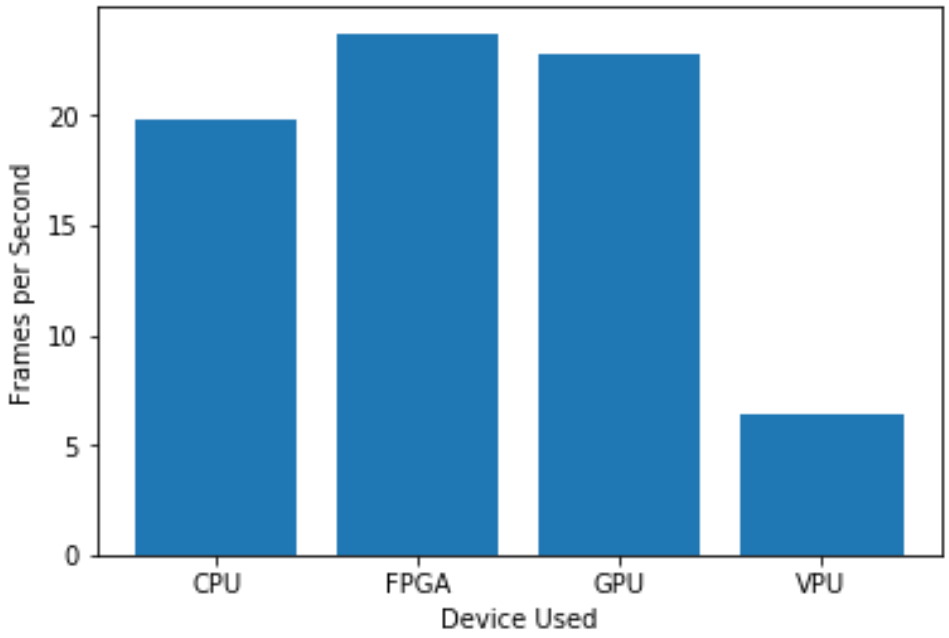


Model Load Time



Inference Time



FPS

Final Hardware Recommendation

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Write-up: Final Hardware Recommendation
VPU *-it takes considerably very less loading time in comparison to other high end competents* *-since we are having a very high time constraint and higher inference is required to be processed with in seconds so keeping all these in minds VPU is extremely great option to operate with* *-cost constraint will also be fulfilled* *-Since a large number of VPU's will be needed to be installed in front of each gate-> power consumption will be cut out and never be a major deal in near future*