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* | | |

|  |  |  |
| --- | --- | --- |
| **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. | |
| *The client’s production floor runs 24 hours a day and packaging continues non stop.* | *FPGA is a robust hardware with a 100% on-time performance meaning it can run continuously 24/7* | |
| *The client would like a solution that can be repurposed so as to solve two problems* | *FPGA is configurable even after deployment on site i.e. logic is programmable. It can be reprogrammed to optimize its performance for different functions as needed.* | |
| *The client would like the system to last 5 to 10 years after installation* | *FPGAs that use devices from Intel’s Internet of Things Group have a guaranteed availability of 10 years, from start of production.* | |

## Queue Monitoring Requirements

|  |  |  |
| --- | --- | --- |
| **Maximum number of people in the queue** | *[TODO: Type your answer here]* | |
| **Model precision chosen (FP32, FP16, or Int8)** | *[TODO: Type your answer here—choose from ]* | |

## 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** | | |
| *[TODO: Type your answer here]* | | |

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# 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.

|  |  |  |
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| **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?** | |
| *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. | |
| *The client does not have much money to invest in additional hardware therefore use of preexisting hardware (intel i7 core).* | *CPU comes with the computers the client has. The available intel i7 CPU would be enough.* | |
| *The client wants to save on electric bill* | *CPUs have the following power consumption relationship, Higher Performance=More Power=Higher Cost.* | |
| *[TODO: Type your answer here]* | *[TODO: Type your answer here]* | |

## Queue Monitoring Requirements

|  |  |  |
| --- | --- | --- |
| **Maximum number of people in the queue** | *[TODO: Type your answer here]* | |
| **Model precision chosen (FP32, FP16, or Int8)** | *[TODO: Type your answer here—choose from ]* | |

## 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** | | |
| *[TODO: Type your answer here]* | | |

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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.

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

|  |  |  |
| --- | --- | --- |
| **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. | |
| *The client is using CPUs to process footage, and no significant processing power is available to run inference. The system in use needs an upgrade* | *VPU is an accelerator, meaning it accelerates the performance of the pre-existing CPU. An NCS2 would be interfaced with a CPU to perform inference.* | |
| The client has a budget of $300/machine and would like to save on hardware requirements. | *VPU is a cost-efficient way to add performance to a pre-existing system, costing around $70 to $100, well within the budget.* | |
| *The client would like to save on future power requirements* | *VPU is a low-power device and would not consume much power.* | |

## Queue Monitoring Requirements

|  |  |  |
| --- | --- | --- |
| **Maximum number of people in the queue** | *[TODO: Type your answer here]* | |
| **Model precision chosen (FP32, FP16, or Int8)** | *[TODO: Type your answer here—choose from ]* | |

## 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).

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| --- | --- | --- |
| **Write-up: Final Hardware Recommendation** | | |
| *[TODO: Type your answer here]* | | |

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