Choose the Right Hardware

Proposal Template

# Scenario 1: Manufacturing

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

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| --- | --- |
| **Requirement Observed**  **(Include at least two.)** | **How does the chosen hardware meet this requirement?** |
| *Mr. Vishwas needs multiple chip designs and new designs are created regularly, the system can be reprogrammed and optimized to quickly to detect flaws in different chip designs.* | *FPGA (field programmable gate array) can be reprogrammeable to adapt to new, evolving, and custom networks. The bitstreams being used can be updated without changing the hardware. This allows to improve the performance of system without replacing the FPGA.* |
| *The floor running 24 hours a day so that packaging continues nonstop.* | *FPGAs are designed to have 100% on-time performance, they can be continuously running 24 hours a day, 7 days a week, 365 days a year.* |
| *Mr. Vishwas has plenty of revenue to install a quality system, and they would ideally like it to last for at least 5-10 years.* | *FPGAs is expensive (which is not an issue in this case)but have a long lifespan. FPGAs that use devices from Intel’s Internet of Things Group have a guaranteed availability of 10 years, from start of production.* |
| *Mr. Vishwas has fectory where he needs to deploy the AI at the edge, where the temprauter is high.* | *FPGAs are able to function over a wide range of temperatures, from 0° C to 60° C. This means that FPGAs can be deployed in harsh environments like factory floors and still perform optimally.* |

## 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]* |

# Scenario 2: Retail

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

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| --- | --- |
| **Requirement Observed**  **(Include at least two.)** | **How does the chosen hardware meet this requirement?** |
| Most of the store's checkout counters have computer, with an Intel i7 core processor. These processors are only used to carry out some minimal tasks that are not computationally expensive. | *So the tasks cpu doing are not computationally expensive it can be use the existing cpu/igpu to deploy the AI at the edge.* |
| *They are not want to spend on aditional hardware, also would like to save as much as possible on his electric bill.* | *So there is no choice for new hardware and to save electric bill we can utilize the already runnint cpu* |

## 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]* |

# Scenario 3: Transportation

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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?** |
| *Ms. Leah's budget allows for a maximum of $300 per machine.* | VPU or NCS2 is under 300$ and would fit in the price range. |
| *She would like to save as much as possible both on hardware and future power requirements.* | *NCS2 is low power consumption device* |
| *CPU currently used has significant processing power availble.* | *The processing power is already availble we can accelerates the exsiting CPU power by using VPU.* |

## 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]* |