

Master Thesis Project Requirements Document.

Title - GPU cluster based  
real time brand logo detector  
in input video stream.

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## 1 Introduction

It is clear from the project title that there is a requirement of multiple GPUs to perform the brand logo detection. The further requirements for the project is as given below:

## 2 Hardware requirements

The hardware components that are required for the project are as listed below. The

### 1. Node based hardware requirements

- **Nvidia GPUs** - For this project more than one GPU is sufficient for handling the workload. I am planning to use all the currently available GPUs at office. During project, characterization of workloads among the connected GPUs will be studied. The hardware configuration of the GPU consisting 1536 CUDA cores are well equipped to handle the workload.
- **SMPS** - with required power supply.
- **Infiniband** - To connect each of the compute nodes, an infiniband is used. It is used for data interconnect among the computational GPU nodes. It has a very high throughput and very low latency.
- **Network ports** - To be able to access the connected GPUs on other computers in the office.
- **CPU processor** - CPU processor present in the motherboard compatible with the GPUs. The one available at the office is sufficient for this project.
- **PCIe slot enabled motherboard** - It enables connection between CPU and GPUs. The PCIe slots determine the number of GPUs that can be connected in the cluster.

### 2. General requirements

- **Cooling unit** - A sufficient amount of heat is generated by the GPUs and other hardware units, hence cooling unit is required to be placed in the cabinet.
- **Cabinet** - A cabinet encompassing the hardware parts of the setup is required to provide protection to sensitive electronic boards.
- **Personal Computer** - Linux based personal computer to perform programming and documentation task.