

Configuration Manual

MSc Research Project
MSc Artificial Intelligence

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Project Submission Sheet
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Configuration Manual

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1 Hardware & Software Requirements

Table 1 outlines the minimum hardware requirements and recommended software versions to run the project. Since, the project experiments with Large Language Models, it is necessary to have a dedicated GPU to carry out the experiments.

Component	Specification
Operating System	Linux-based
Python Version	Python 3.10
PyTorch Version	PyTorch 2.7
CUDA Version	CUDA 11.8
GPU	48 GB VRAM (e.g. NVIDIA A40)
CPU	9 vCPUs
RAM	50 GB
Storage	256GB SSD

Table 1: Minimum Hardware & Recommended Software Requirements

2 Environment Setup

Python is used for the entire project, so it is essential to have a python environment. Use the following commands to setup a python environment on a linux machine.

```
python -m venv venv
source venv/bin/activate
```

For windows:
`venv\Scripts\activate`

Or use conda to create environment:

```
conda create -n venv python=3.10
conda activate venv
```

2.1 Libraries Installation

Each python notebook have command to install the libraries in the very first cell or the notebook or under certain sections of an experiment. Just run the cell to install libraies. **Note:** If you have installed a library but it is not recognized by the interpreter, restart the python kernal and rerun the script.

2.2 API Keys & Model Access

To run the experiments, we need 2 API Keys - **OpenAI** and **Huggingface**.

To generate the questions for the dataset, an OpenAI API Key is required. Follow the given steps to obtain an OpenAI API Key.

1. Go to <https://platform.openai.com/>.
2. Sign in or create a new account.
3. Open the “View API keys” section from your account dashboard.
4. Click on “Create new secret key” and copy the generated key.

To load the gates models, first we need to request access for gates models via following steps:

1. Visit <https://huggingface.co/google/gemma-3-4b-it>.
2. Sign in to your Hugging Face account or create a new one.
3. Click on the “**Access repository**” button and accept the terms of use.
4. Repeat the same steps for <https://huggingface.co/meta-llama/Llama-3.1-8B-Instruct>.

After gaining access we need to create an API key that will act as authentication to access these models.

1. Go to your Hugging Face account settings: <https://huggingface.co/settings/tokens>.
2. Click on “**New token**” to create a key.
3. Select the desired permissions (e.g., “Read”).
4. Copy the generated key and store it securely.

The keys generated and saved will be prompted as an input during experimentation.

3 Other Information

3.1 File Paths

The project uses relative path for **.csv** files to load and save files. If error occurs due to some OS issues, switch to absolute paths or change directories within the code.

3.2 Torch CUDA Cache

The code clears the CUDA cache after every sub-experiments. Occasionally, torch will be unable to empty the cache for some reasons. For this case, restart the kernel and just run the sub-experiments independent of the other sub-experiments. You may need to load the dataset again.