

Installation

This project consists of two different codes package, C++ and Python, and requires the installation of dependencies for both C++ and Python

Suggestion Operation System

- ubuntu 22.04
- Ros2 humble

C++ Dependencies

- [ROS2](#)
- [PCL](#)
- [OpenCV](#)
- [Iridescence](#)
- [GLFW](#) (zlib/libpng license)
- [gl3w](#) (Public domain)
- [Dear ImGui](#) (MIT license)
- [ImGui](#) (MIT license)
- [implot](#) (MIT license)
- [Eigen](#) (MPL2 license)
- [portable-file-dialogs](#) (WTFPL license)

Python Dependencies

- [Pytorch](#)
- [MobileSAM](#)
- [timm](#)

Install C++ dependencies

```
# Install dependencies for Iridescence
sudo apt-get install -y libglm-dev libglfw3-dev libpng-dev libjpeg-dev libeigen3-dev libboost-fs-dev libboost-program-options-dev

# Install Iridescence for visualization
##Option1,copy the iridescence attached with this software to your computer
mkdir iridescence/build && cd iridescence/build
cmake .. -DCMAKE_BUILD_TYPE=Release
```

```

make -j$(nproc)
sudo make install
##option2, download iridescence.this method might have some problem if iridescence
updated.
git clone https://github.com/koide3/iridescence --recursive
mkdir iridescence/build && cd iridescence/build
cmake .. -DCMAKE_BUILD_TYPE=Release
make -j$(nproc)
sudo make install

# in some case the zvision can't find iridescence package, please add the
/usr/local/lib into the ld.so.conf using below command
sudo vim /etc/ld.so.conf

# make the config into effective
sudo /sbin/ldconfig -v

```

Install Python Environments

A new environment must be created and all the dependencies shall be installed under this environment, this document use pytorch_env as the environment name , users can change this environment name

```

# Install miniconda3
# download Miniconda3-py39_4.12.0-Linux-x86_64.sh from website
bash Miniconda3-py39_4.12.0-Linux-x86_64.sh

# create and activate pytorch environment
# make sure the python version consistent with the python version of ROS2
conda create -n pytorch_env python=3.10
conda activate pytorch_env

# install pytorch and cuda in the pytorch environment
# make sure the cuda version keep consistent in below two commands
# make sure the Nvidia driver is installed correctly
nvidia-smi
conda install pytorch==2.1.0 torchvision==0.16.0 torchaudio==2.1.0 pytorch-
cuda=11.8 -c pytorch -c nvidia

# install pytorch for CPU if Nvidia display card is not available
## Option 1
conda install torch
## Option 2
pip install torch
## Option 3
pip install torch-2.1.2+cpu-cp310-cp310-linux_x86_64.whl

# install MobileSam
# option1:download MobileSam and run below command
cd ~/MIAS-LCEC/bin/MobileSAM
pip install -e.
# option2

```

```
pip install git+https://github.com/ChaoningZhang/MobileSAM.git

# install timm/pyautogui/pygame
pip install timm
```

Download and configure MIAS-LCEC

Download MIAS-LCEC from GitHub and configure the environment path of the program.

```
# clone git source
cd ~
git clone https://github.com/ZWhuang666/MIAS-LCEC.git
cd ~/MIAS-LCEC/

# activate your conda environment and make the configurtaion
conda activate pytorch_env
python config.py
```

If correctly operated, the file "**~/MIAS-LCEC/bin/python/config.json**" will be like:

```
{
  "path": {
    "ros": "/bin/python",
    "conda": "your path to conda/envs/pytorch_env/lib/python3.10/site-
packages",
    "sam": "~/MIAS-LCEC/bin/MobileSAM",
  },
  "Debug": {}
}
```

Please make sure to do **conda activate [your conda path]** before tapping **python config.py**. If the program failed to run python code, please check your conda environment path using:

```
conda env list
```

and write the correct path to "**~/MIAS-LCEC/bin/python/config.json**" manually.