MicroSim Installation:

1. Install singularity from github according to your OS-version:-

   a. Ubuntu 18.04:

   https://github.com/sylabs/singularity/releases/download/v3.11.3/singularity-ce_3.11.3-bionic_amd64.deb

   b. Ububtu 20.04:

   https://github.com/sylabs/singularity/releases/download/v3.11.4/singularity-ce_3.11.4-focal_amd64.deb

   c. Ubuntu 22.04:

   https://github.com/sylabs/singularity/releases/download/v3.11.4/singularity-ce_3.11.4-jammy_amd64.deb

2. Download the Microsim package from GitHub repository:

   https://github.com/ICME-India/MicroSim/archive/refs/heads/main.zip

3. If you have a pre-built singularity image then skip to step 4.

   If you do not have a pre-built image, then to build singularity image by running the following command in the terminal: (**Sudo permission are needed for building**)

   ```
   sudo singularity build file_name.sif  definition_file.def
   ```

4. Run the following command in terminal (so that Grand-Potential solver can be used via GUI)

   ```
   sh ./swap_script.sh
   ```

   To revert back the settings:

   ```
   sh ./swapback_script.sh
   ```

5. To load the image in singularity and open singularity terminal:

   If using CPU:

   ```
   singularity shell --bind ./MicroSim:/mnt file_name.sif
   ```

   if using Nvidia CUDA then:

   ```
   singularity shell --nv –bind ./Microsim:/mnt file_name.sif
   ```

6. To to the MicroSim folder:

   ```
   cd /mnt
   ```

7. Running MicroSim from terminal:

   ```
   # Go to the Grand potential solver directory
   cd Grand_potential_Finite_difference_2D_MPI

   #clean the old compiled files
   ```

```
make clean

#compile the solver
make

# Run the solver on 4 cores
mpirun -np 4 ./microsim_gp input_tdb_new.in Filling.in outputname 2 2
```

8. To open the GUI:

```
python3 Microsim.py
```