# Install Nvidia modulus in docker and run Lid Driven Cavity example

https://docs.nvidia.com/deeplearning/modulus/modulus-sym/user_guide/getting_started/installation.html

1. docker pull nvcr.io/nvidia/modulus/modulus:24.12

2. docker run --shm-size=1g --ulimit memlock=-1 --ulimit stack=67108864 --runtime nvidia -p 8888:8888 -p 7007:7007 --memory=16g -it nvcr.io/nvidia/modulus/modulus:24.12 bash -c "jupyter notebook --ip=0.0.0.0 --port=8888 --no-browser --allow-root"

3. Open jupyter notebook. Clone modulus sym tutorial into jupyter notebook

   !git clone https://github.com/NVIDIA/modulus-sym.git

4. prepare openfoam cavity result
   - need download openfoam and run cavity (check previous video https://www.youtube.com/watch?v=gQLXWeR90QY&t=3s)
   - use paraview to save data (.group) as cavity_uniformVel0.csv

     //wsl.localhost/Ubuntu/home/benwen/OpenFOAM_Work/OpenFOAM/openfoam-v2406/run/tutorials/incompressible/icoFoam/cavity/cavity/VTK/

     > cavity_uniformVel0.csv

   - upload to jupyter notebook in directory :openfoam/cavity_uniformVel0.csv

4. run cavity example reference

   https://docs.nvidia.com/deeplearning/modulus/modulus-sym/index.html

   https://docs.nvidia.com/deeplearning/modulus/modulus-sym/user_guide/basics/lid_driven_cavity_flow.html#lid-driven-cavity-background

**visualize output result (method 1):**

**use tensorboard to visualize  u,v,p**

1. According to the following URL, we can display the post-processing in tensorboard

   https://docs.nvidia.com/deeplearning/modulus/modulus-sym/user_guide/features/post_processing.html#tensorboard
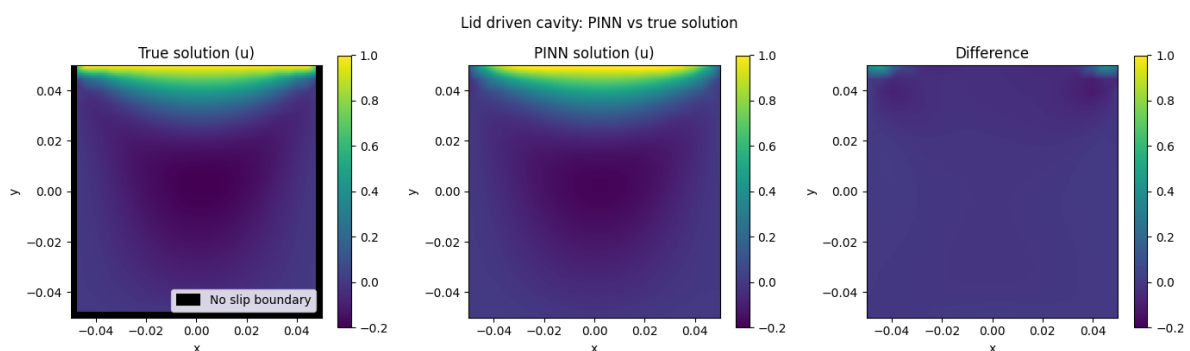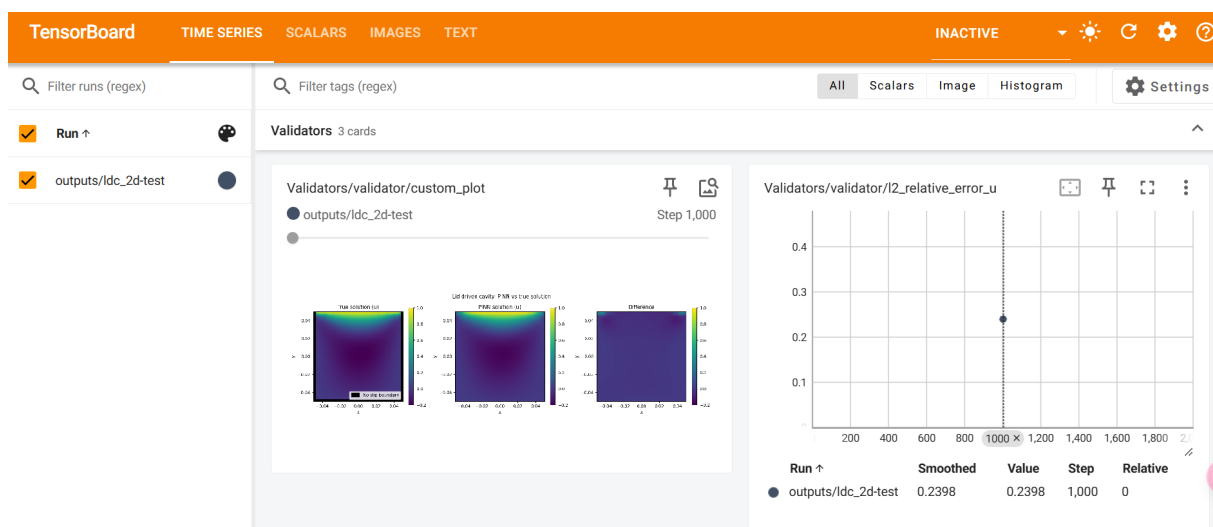
   revise ldc_2d.py,  ldc_2d-test.py

   ldc_2d-test.py

   !python ldc_2d-test.py

4. !tensorboard --logdir=./ --port=7007
   #
   http://localhost:7007/





Lid driven cavity: PINN vs true solution

**visualize output result (method 2):**

Directly use jupyter notebook to view the result graph u, v, p

https://www.youtube.com/watch?v=te39qrgQ-Ao

test-tesorboard-pic (1).ipynb