Steps to getting a remote docker container working with jupyter notebook, tensorflow, and multiple GPU access:

* Install newer version of python than what is included in Ubuntu 18.04
  + Receive error message that one can’t upgrade without updating pip3 first
  + Discover that updating pip3 doesn’t actually matter because…stuff
  + Discover that this cannot be done via pip3 alone and link to someone’s repository that is named ‘deadsnakes’
* Install Docker and test docker – Failure!
  + Docker has connection trouble…discover that it requires IPv6 protocol which is by default disabled.
* Install NVIDIA Container Toolkit using very long piped foreign linux commands – Failure!
  + distributions != distribution
  + Success!
* Test NVIDIA Container Toolkit installation – Failure!
  + Receive error message - Unable to find image ‘nvidia/cudo:11.0-base’ locally, NVIDIA-SMI couldn't find libnvidia-ml.so library in your system. Please make sure that the NVIDIA Display Driver is properly installed and present in your system.
  + Navigate to the nvidia-docker-container folder and discover that this file indeed exists where it is supposed to
  + Find solved issue on GitHub under NVIDIA/nvidia-docker that the something call a .toml defaults to a generic user, you are not this generic user. Edit .toml file and add your username
* Test ssh/sftp remote download and upload capabilities for transferring data csvs and downloading exported results – Linux root/user file/folder/group permissions…Failure & Success!
* Run Docker with special container that includes the packages necessary to run NVIDIA NCCL, Tensorflow v2.5, TensorFlow Multi-GPU library, and jupyter notebook – Success?
  + Connect to IP address and specific port via browser using access token – Success!
* Discover that the NVIDIA/TensorFlow Multi-GPU docker image has trouble accessing multiple GPUs
* Find new Docker arguments to include in Docker startup that remove these problems.
* Question personal life choices and hypothesize that these weren’t included by default or mentioned in TensorFlow’s Docker documentation because it’s all about the journey, not the destination
* Discover that multi-GPU ML training is slower!
  + “Well, *that’s* unexpected.” – Michael Holloway

Other fun facts!

-Cannot use the same model checkpoints with multiple notebooks in linux!