1. **Install Isaac Gym**

   official document for install IsaacGym

   step1. create conda env python3.7

   因为之后的ASE可视化需要，建议安装3.7版本的conda

   step2. git clone

   step3. pip install -e .

2. **(solved) ImportError: libpython3.7m.so.1.0**

   当我在python3.7的conda环境中装libpython的时候，出现了上面的问题

   Solution:

   step1. sudo apt-get install libpython3.7

   step2. Find conda env lib (E.g. miniconda3/envs/isaacgym/lib

   And “ls” you will find libpython3.7.so inside this folder.

   Finally `quit()=/path/to/libpython/directory`

   https://github.com/deepmind/acme/issues/47

3. **(solved) X Error of failed requests:**

这个在每一次跑他们的代码的时候都可能出现，所以重启电脑之后最好先运行一个这个代码。具体问题可能是由于在 xorg.conf 文件中的设置出现错误或不兼容，导致了问题的发生。通过设置 VK_ICD_FILENAMES 环境变量来指定NVIDIA Vulkan Installable Client Driver (ICD) 文件的路径，是绕过直接更改 xorg.conf 设置的一种方法

   Solution:

   - export VK_ICD_FILENAMES="/usr/share/vulkan/icd.d/nvidia_icd.json"
     ref link

4. **(solved) loading checkpoint 'calm/data/models/calm_llc_reallusion_sword_shield.pth' Exception invalid load key, 'v'. when trying to execute <function load at 0x7f83462ff0d0> with args:('calm/data/models/calm_llc_reallusion_sword_shield.pth',) and kwargs:{}...**

   这个问题的出现是因为我没有下全他们的checkpoints, 需要拉取他们的大文件

Git LFS（Git Large File Storage）是一个Git扩展，旨在处理大型文件的版本控制和存储。在传统的Git版本控制中，所有文件的内容都会被存储在Git仓库中，这对于文本文件等小型文件是合适的。然而，当涉及大型文件（例如图像、音频、视频、数据集等）时，将它们直接存储在Git仓库中可能会导致仓库变得庞大，影响克隆、推送和拉取的性能。

Git LFS 解决了这个问题，它通过在Git仓库中存储大型文件的指针，而实际文件内容则存储在一个专门的存储服务器上。当你克隆、推送或拉取一个包含大型文件的Git仓库时，Git LFS会自动处理大文件的下载和上传。

Solution：

step1. sudo apt-get install git-lfs
step2. git lfs install
step3. git lfs pull
https://github.com/NVlabs/CALM/issues/7

5. **(solved) vision control: ‘**

我的电脑在一开始出现很多版本问题，后来发现是因为nvidia3080支持的cuda版本相对过高。

Solution:

`conda install pytorch==1.8.1 torchvision torchaudio cudatoolkit=11.1 -c pytorch -c nvidia`

`pip install numpy==1.19.5`

**nvidia3090 require cuda11.1**

ref: https://blog.csdn.net/chumingqian/article/details/125387959

公司的服务器也是一样的问题

- 可以通过这个代码来看当前CUDA可以支持的pytorch版本：torch.zeros(1).cuda()

NVIDIA GeForce RTX 4090 with CUDA capability sm_89 is not compatible with the current PyTorch installation.
The current PyTorch install supports CUDA capabilities sm_37 sm_50 sm_60 sm_70.
If you want to use the NVIDIA GeForce RTX 4090 GPU with PyTorch, please check the instructions at https://pytorch.org/get-started/locally/

- conda install pytorch==1.8.1 torchvision  torchaudio cudatoolkit=11.8 -c pytorch -c conda-forge

6. **(solved)** RuntimeError: **CUDA out of memory.** Tried to allocate 700.00 MiB (GPU 0; 11.74 GiB total capacity; 469.86 MiB already allocated; 472.00 MiB free; 478.00 MiB reserved in total by PyTorch)

在跑深度学习或者强化学习的代码时，CUDA out of memory 是很常见的问题，基本的解决方法就是将batch size改小。

1. 我想要首先检查我的GPU内存
   command to check the VRAM:
   ‘nvidia-smi --query-gpu=memory.total --format=csv,noheader,nounits’
   我的电脑GPU内存：
   nvidia-smi3080 has VRAM: 12288, approximate 12 GB

- 更改Batch size:
  https://github.com/NVlabs/CALM/issues/4
  I was running on a 12 GB VRAM so I changed the minibatch size and env number even smaller, at the cost of more training time:

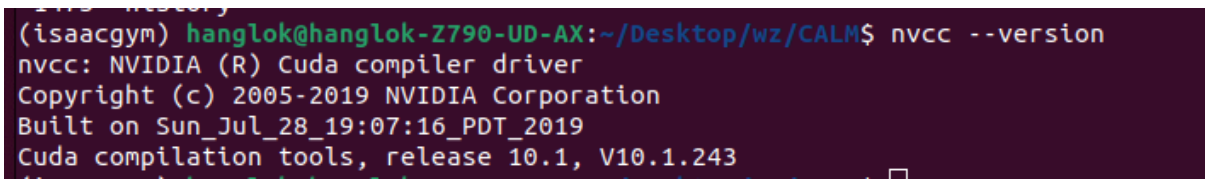
  我最后更改的参数：
  256 environments
  1024 minibatch_size
  256 amp_minibatch_size
  10000 buffer sizes

**7. If this call came from a _pb2.py file, your generated code is out of date and must be regenerated with protoc >= 3.19.0.**

SOLUTION：
1. Downgrade the protobuf package to 3.20.x or lower.
2. Set PROTOCOL_BUFFERS_PYTHON_IMPLEMENTATION=python (but this will use pure-Python parsing and will be much slower).

More information:
https://developers.google.com/protocol-buffers/docs/news/2022-05-06#python-updates

1. command to check my cuda version:
   nvcc -version




   so now the server’s cuda version is 10.1

   If not installed, using command:
   sudo apt-get update
   sudo apt install nvidia-cuda-toolkit

2. pip install protobuf==3.20.0

**8. RuntimeError: CUDA error: no kernel image is available for execution on the device**

1. see current torch support version
   import torch
   torch.version.cuda

   It seems that my torch.cuda.version is 10.2 but my computer only support 10.1

   a). nvidia-smi CUDA version 12.0
   nvcc - version CUDA 10.1
   b). torch.cuda.get_arch_list()
   ['sm_37', 'sm_50', 'sm_60', 'sm_70']

**9. 远程连接服务器的时候出现运行问题： Importing module 'rlgpu_37'**
**(/home/hanglok/Desktop/wz/CALM/isaacgym/python/isaacgym/_bindings/linux-x86_64/rlgpu_37.so)**
**Setting seed: 7778**
**Started to play**
**Not connected to PVD**
**+++ Using GPU PhysX**
**Physics Engine: PhysX**
**Physics Device: cuda:0**
**GPU Pipeline: enabled**
**Segmentation fault (core dumped)**

- 解决办法：加 -headless

Useful command:

1. check Ubuntu version:
   lsb_release -a