Reseach about RL Environments

- OpenAI Gym
- OpenAI Universe
- Arcade Learning Environment(ALE)
- Facebook CommAI
- Deepmind Lab and Etc.

OpenAI Gym

- https://gym.openai.com/envs

- 주로 게임에 특화(Atari, Minecraft, Doom)

  - Doom을 풀기 위한 솔루션

    - https://www.youtube.com/watch?v=74taQqxYIuM
    - Double DQN, VGG Augmentation
    - Reward Prediction, Hierarchical RL

- Control Problems(Box2D, MuJoCo)

OpenAI Universe

- Universe makes it possible for any existing program to become an OpenAI Gym environment

  – without needing special access to the program's internals, source code, or APIs.

  – https://github.com/openai/universe
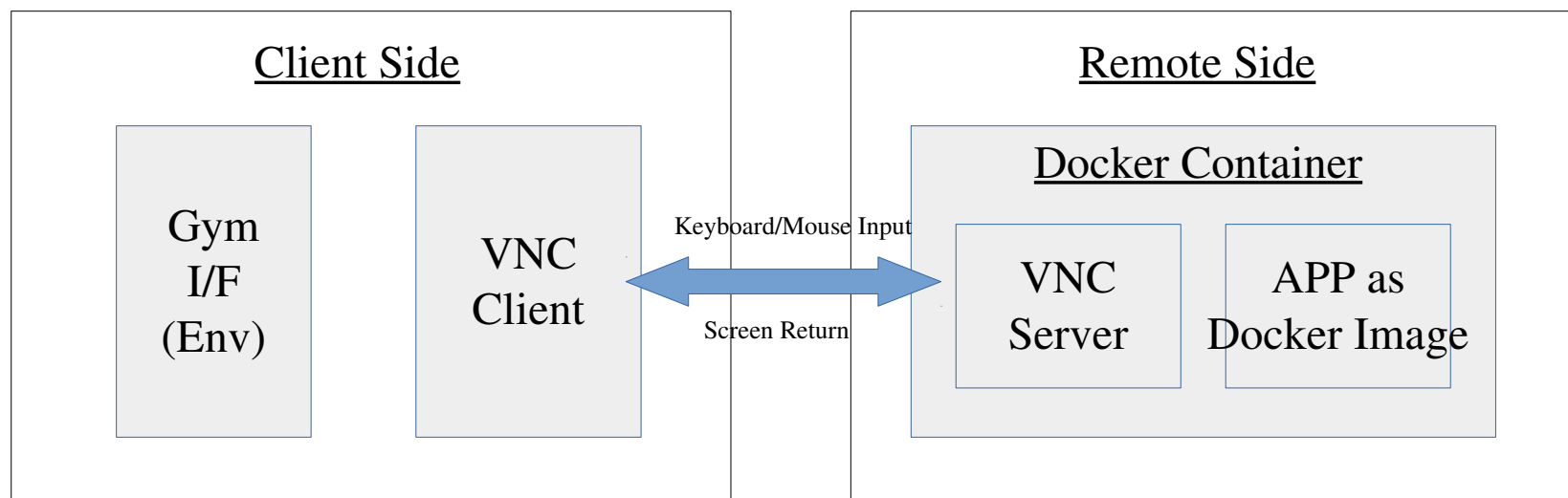
Arcade Learning Environment(ALE)

- Atari2600 Emulator(Stella) 기반으로 제작
    - https://github.com/mgbellemare/Arcade-Learning-Environment
    - http://www.arcadelearningenvironment.org/

1. **Shared Library interface** (C++ only): Loads ALE as a shared library (Section 3).

2. **CTypes interface** (Python only): A fast Python interface to ALE, provided as a Python package (Section 4).

3. **FIFO interface** (all languages): Communicates with ALE through a text interface (Section 5).

4. **RL-Glue interface** (C/C++, Java, Python, Matlab, Lisp, Go): Communicates with ALE via RL-Glue (Section 6).

Facebook CommAI

- Communication-based tasks
    - https://github.com/facebookresearch/CommAI-env
    - 인간과 대화하며 인간이 요청하는 다양한 task를 수행하는 Agent를 실험하는 환경
        - 완성도 측면에서 확인이 필요

Etc.

- Deepmind Lab
  - https://github.com/deepmind/lab
  - Quake3 게임에 한정되어 있음
  - 3D 학습환경이라는 장점
- Microsoft Malmo
  - https://github.com/Microsoft/malmo
  - Minecraft 기반
- StarcraftAI
  - BWAPI : opensource C++ framework for BroodWar
  - http://www.starcraftai.com/wiki/Main_Page
- MindPark
  - https://github.com/danijar/mindpark
  - Good implementations of RL Agents and environments