
TSAIL vizdoom cig2017 bot description

Anonymous Author(s)

Affiliation

Address

email

1 General Framework

The name of our bot is YanShi, an ancient puppet designer who can made very smart puppet by bones, woods and feathers. His story was recorded in an ancient book <LieZi - TangWen>.

In contrast with previous end-to-end apporaches, e.g. DQN [3], we separate the perception and planning function explicitly. The intuition is that detecting meaningful objects like weapons and enemies is crucial for the policy but difficult in complex scenarios with sparse signals in reinforcement learning settings. The architecture of our model is shown on Fig. 1.

To get more accurate perception results, We train a separated detection network [2] with additional supervision, which is obtained via hacking the doom engine. We select the best architecture by the tradeoff between the time efficiency and detection accuracy. According to our observation, the perception module detects resources and enemies efficiently. Yanshi also adopts Simultaneous localization and mapping (SLAM) to obtain the XYZ position of agent itself.

The planning part consists of rules and Monte Carlo Tree Search (MCTS). It receives bounding boxes and positions from the preception module, then output actions. We also integrate the existing planning network as a supplement, i.e. F1 [4](for track1) and IntelAct [1](for track2). The final action are combined from both side.

2 Architectures in Different Scenarios

We take part in both tracks of the competition. We use same planning network but different detection networks and rules for both tracks.

3 Contact Information

If you have any problem, you can contact me by email [sproblvem@gmail.com], or by skype [sproblvem.yama].

I am a big fan of FPS games. My teenager life consists of Quake, Delta Force and Half Life - Counter Strike. And my first book of programmer is the <Masters of Doom> written by David Kushner. So I am really excited to enroll in this game again.

Thank you guys for organizing this wonderful competition!

References

- [1] A. Dosovitskiy and V. Koltun. Learning to act by predicting the future. *arXiv preprint arXiv:1611.01779*, 2016.
- [2] S. Huang and D. Ramanan. Expecting the unexpected: Training detectors for unusual pedestrians with adversarial imposters. *arXiv preprint arXiv:1703.06283*, 2017.

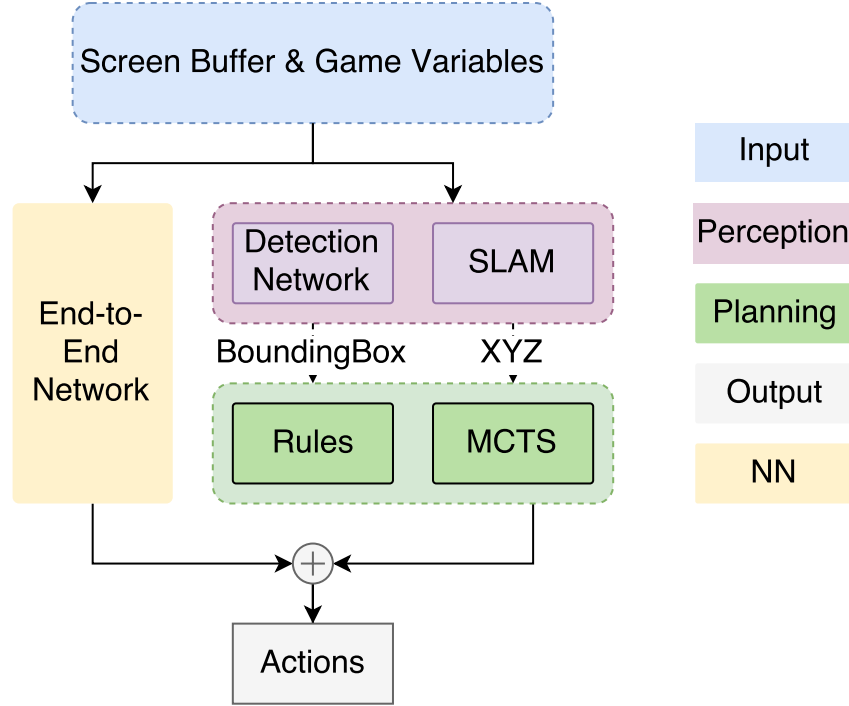


Figure 1: An illustration of the architecture of our model.

- [3] V. Mnih, K. Kavukcuoglu, D. Silver, A. Graves, I. Antonoglou, D. Wierstra, and M. Riedmiller. Playing atari with deep reinforcement learning. *arXiv preprint arXiv:1312.5602*, 2013.
- [4] Y. Wu and Y. Tian. Training agent for first-person shooter game with actor-critic curriculum learning. In *Submitted to Int'l Conference on Learning Representations*, 2017.