Week 2

Learn the book of Reinforcement Learning: An Introduction by Sutton. Because I need to use the TD algorithm. Then I read two survey about algorithm problem on Games. In the end, I'm reading a paper about MOED with Game, but I still need time to understand clearly.

A Survey of Real-Time Strategy Game AI Research and Competition in StarCraft

[1] This paper presents an overview of the existing work on AI for real-time strategy (RTS) games. And they focus on the game named StarCraft, which has been studyed for a long time. The field of real-time strategy (RTS) game AI has advanced significantly since Michael Buro's call for research in this area [2].

The defination of RTS is a subgenre of strategy games where players need to build an economy (gathering resources and building a base) and military power (training units and researching technologies) in order to defeat their opponents (destroying their army and base). Then the difference between RTS games and traditional board games are...and the information about StarCraft...

Early research in AI for RTS games identified the following six challenges:resource management,decision making under uncertainty,spatial and temporal reasoning,collaboration (between multiple AIs),opponent modeling and learning,adversarial real-time planning. In this paper, the author regroup them into six main areas:

1 Planning

2 Learning

3 Uncertainty

4 Spatial and Temporal Reasoning

5 Domain Knowledge Exploitation

6 Task Decomposition

Task Decomposition is a problem of multi-objective, my inspiration will come from this part. I could divide the task goal, just like the StarCraft, this game has two goal which are to live for longer time and to have larger army.

Next, this paper introduces the details of RTS games AI performance on three levels of observation: strategy, tactics, and reactive control. In the end, the author lists state-of-the-art bots and StarCraft AI competitions.

References

[1] Santiago Ontañón, G.Synnaeve, A.Uriarte, F.Richoux, D.Churchill, and M.Preuss. A survey of real-time strategy game ai research and competition in starcraft. *IEEE Transactions on Computational Intelligence and AI in Games*, 5(4):293–311, 2013.

[2] Michael Buro. Real-time strategy games: A new ai research challenge. pages 1534–1535, 01 2003.