Karlsruhe Institute of Technology

Collect Result

Bilateral, Mulit-agents' negotiations, Thesis plan

Yue Ning: 2137291

Lehrstuhl für Interaktive Echtzeitsysteme(IES), Prof. Dr.-Ing. J. Beyerer, Dr.-Ing T. Zander
Data Science Labs, NEC, Principal Researcher Dr.-Ing Y. Mohammad

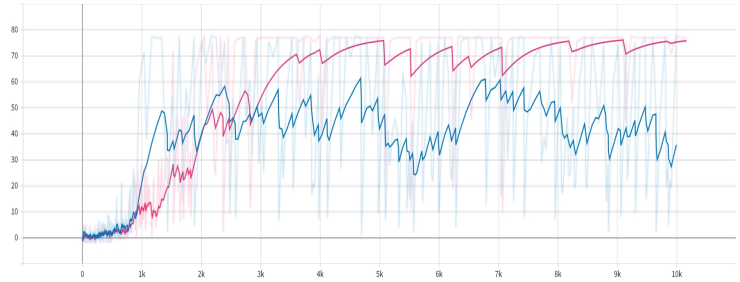
Two agents' negotiation (Bilateral Negotiation)

- Learned Strategies
  - Strategy of Response
  - Strategy of Propose
- Learning Environments
  - single issue
  - multi issues
- Algorithms
  - DQN
  - PPO1

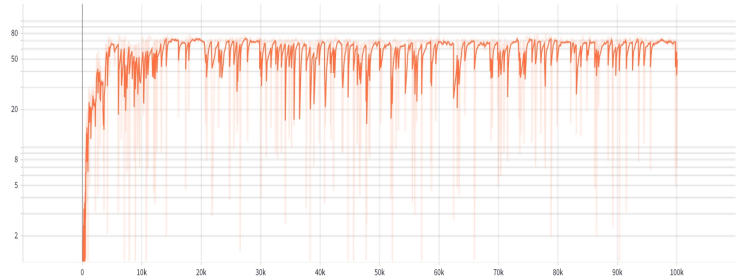
Example result shown in tensorboard

Episode reward: The reward of Acceptance strategy and offer/bidding strategy is increasing.

SIgnle issue, acceptance strategy, episode reward, dqn(blue line) and ppo1(pink line)



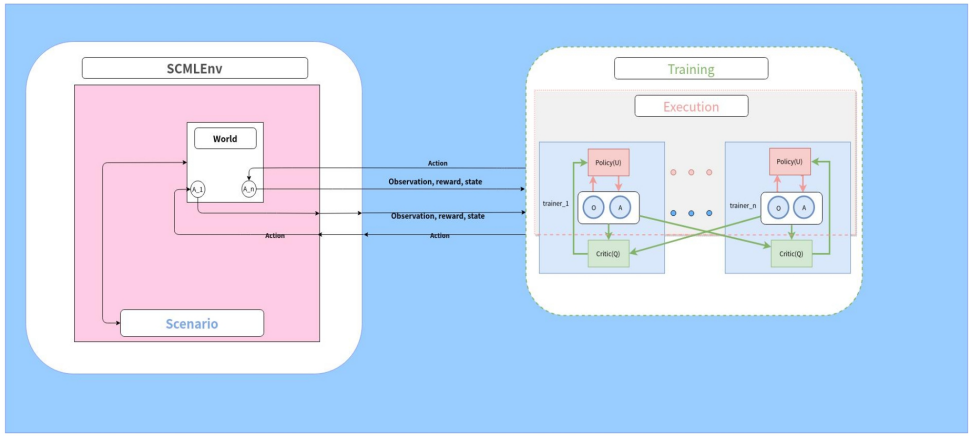
SIgnle issue, offer/bidding strategy, episode reward, ppo1



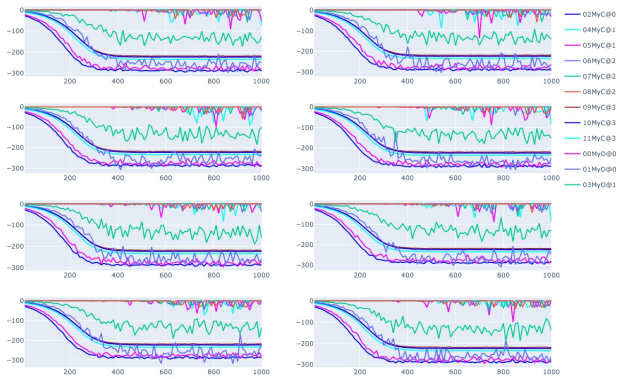
Multi-agents' negotiations (ongoing)

- Algorithm
  - Multi-Agent Deep Deterministic Policy Gradient (MADDPG)
- Learning Environment
  - SCML2020World
- Learned Strategies
  - Determine the scope of negotiation issues
  - Strategy of Response

Overview of Model (SCMLEnv + MADDPG)



multi-agent decentralized actor, centralized critic



Thesis plan

- Time
  - Middle of february to the end of March
- Structure
  - Knowledge about **Negmas** and **Scml**
  - Two agents, Bilateral negotiation under **Negmas**
  - Multi-agents, complex environments negotiations under **SCML**
  - Evaluation, RL Algorithms under the **Negmas** and **SCML**