CCAgent

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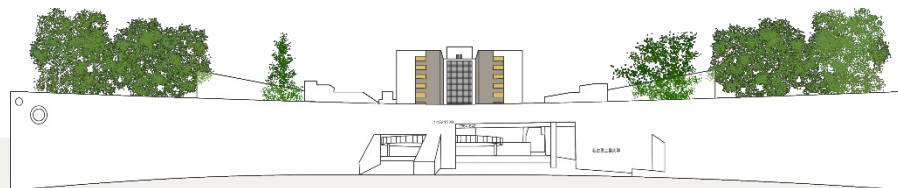
Nagoya Institute of Technology
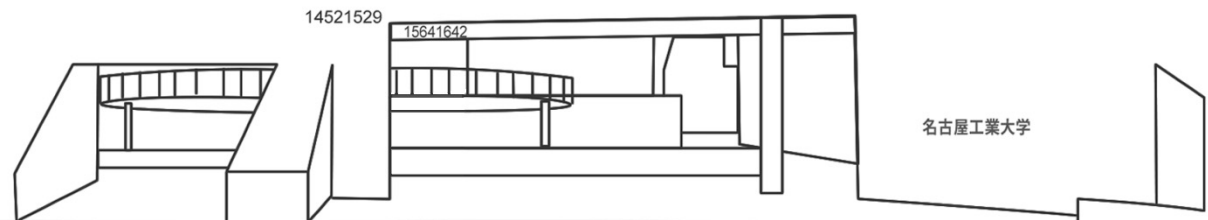
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Features of CCAgent

- We develop CCAgent for Supply Chain Management League (OneShot).

- CCAgent is based on SimpleAgent.

- CCAgent applies *cooperative* and *compromising* **strategies**.

SCML-2023 Oneshot

- Our consideration for an agent's strategy has shifted from **price** to **quantity**.

- The range of possible prices has narrowed.

    - It's now two consecutive integer values (high or low).

- The impact of price on utility has decreased.

- Everything except price is the same as last year.
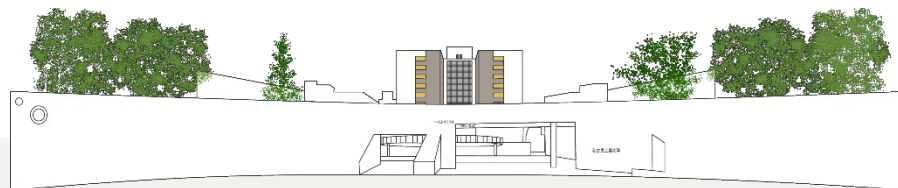
The points to be considered: *quantity*

- ***It's not about price, but quantity.***
- Ideally, the target quantity should be achieved without any shortfall or excess.
- However, concurrent negotiations makes it difficult to achieve a perfect balance.
- Our preliminary experimental results show that
  - a seller's utility tends to decrease when there is an excess of products, and
 - a buyer's utility tends to decrease when there is a shortage of products.
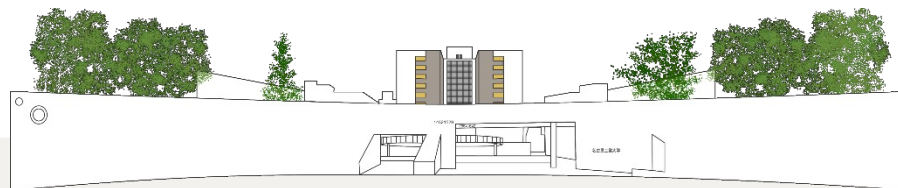
Main Idea of CCAgent

- *Quantity*: **Over-selling/over-buying**

- *Price*: **Bull and bear strategy**
  – Offer: bullish strategy
 – Accept: bearish strategy
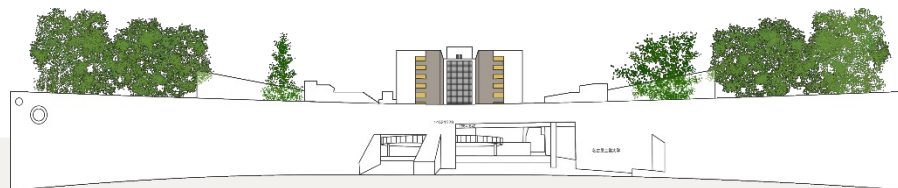
Offer Strategy of CCAgent

- We apply a *cooperative strategy*.
- CCAgent proposes an acceptable quantity by considering the opponent's proposal.
- Quantity:
  - The smaller of the quantity offered by an opponent and the quantity currently needed is proposed.
  - CCAgent *always offers the quantity offered by an opponent or below.*
- Price:
  - CCAgent proposes her *best price*.
  - When CCAgent is a *buyer*, she offers *a low price*.
  - When CCAgent is a *seller*, she offers *a high price*.
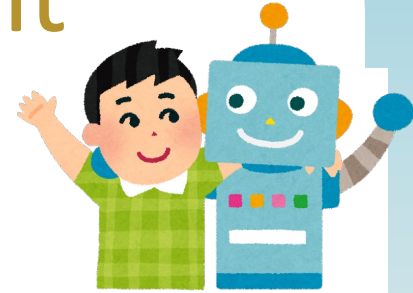
Accept Strategy of CCAgent

- We apply a ***compromising strategy***.

- Quantity:
  - CCAgent accepts a proposal ***even if the proposed quantity is one more than currently required***.
    - She rejects a proposal when the proposed quantity is two more than currently required.
  - She finalizes a negotiation when the quantity currently required is 0 or below.

- Price:
  - She ***always accepts*** the trading price proposed by an opponent.
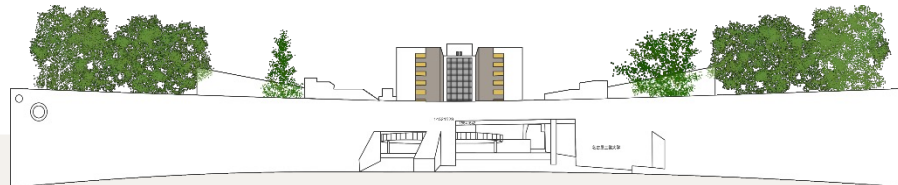
Experimental Results

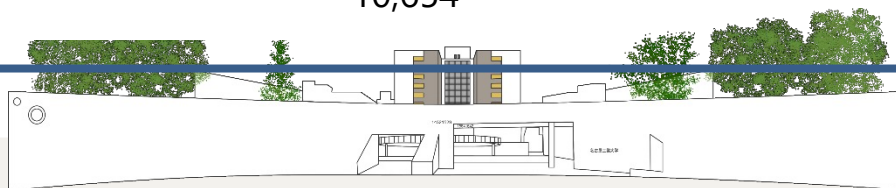|	Average Score (100 games)
CCAgent	**11,016**
SimpleAgent	10,924

CCAgent outperforms SimpleAgent!

Based on the tournament run on 2023-05-03 13:47:58 UTC.

#	Agent	Score
1	QuantityOrientedAgent	10,969
2	CCAgent	10,846
3	SyncAgent	10,654

Last online tournament on May 3rd, 2023

CCAgent is ranked second!

Conclusions

- We developed CCAgent based on SimpleAgent.

- CCAgent applies cooperative and compromising strategies.

- CCAgent is second at the last online tournament on May 3rd, 2023.

- The future work includes predicting an opponent's acceptance strategy.