Project Internship – Intelligent Agents

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Recap

- Five agents of three types

  1x Auctioneer

  Sells the documents to the IR agents.

  2x Questioner

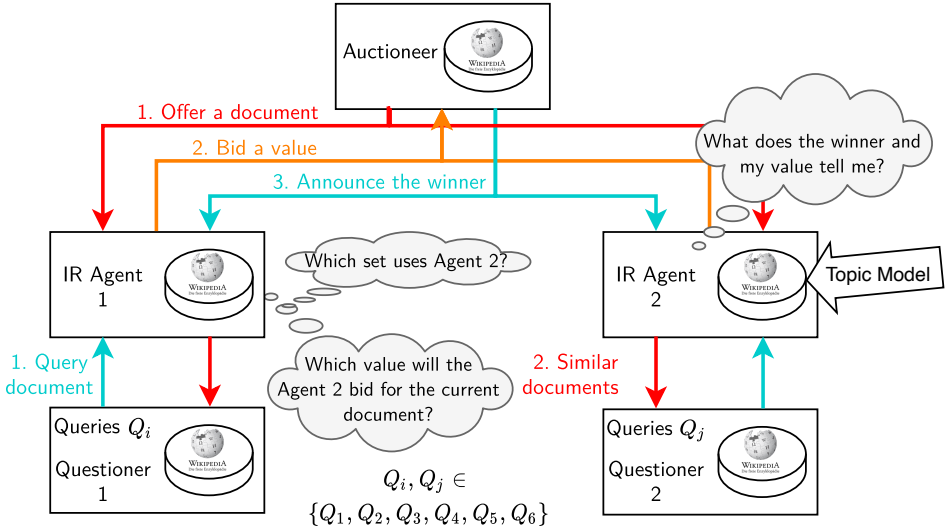
  Asks queries ($Q_i, Q_j \in \{Q_1, Q_2, Q_3, Q_4, Q_5, Q_6\}$) to an IR agent.

  2x IR Agent

  Combines the bidding functionality and the answering of queries.

- The auction will run simultaneously along with the query answering.

Recap


Auctioneer
1. Offer a document
2. Bid a value
3. Announce the winner
What does the winner and my value tell me?
IR Agent 1
Which set uses Agent 2?
IR Agent 2
Topic Model
1. Query document
Which value will the Agent 2 bid for the current document?
2. Similar documents
Queries Q_i
Questioner 1
Queries Q_j
Questioner 2
$Q_i, Q_j \in \{Q_1, Q_2, Q_3, Q_4, Q_5, Q_6\}$

Possible Solution

Agent Setup

- Nearly no changes to solution of exercise 2
- Considered limits of value function
- Added the new complex strategies

Anticipate Competitor

- Create a simple bidder for each of the five possible competitors
- Update the possible competitors during the auction
- Get all possible values when a new document is offered during the auction
- Bid based on strategy (next slide)
- When sold, check who won and update the errors per competitor
- Remove competitors with more than 25 errors

Strategies

Maximum Amount

- If our value is more than highest competitor, bid this $+1$
- Bid the median of the values of the competitors

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- Thus, gain more knowledge about the competitors and can save money later

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Own?

Results I

```
==> Questioner 1:  Films (queries_iv)
        num_incompatible:  0
        num_compatible_moderate:  10
        precision:  0.7699999999999999
        recall:  0.2566666666666667
        f1:  0.38499999999999995
<==
==> Questioner 2:  Cities (queries_i)
        num_incompatible:  4
        num_compatible_moderate:  6
        precision:  0.7666666666666666
        recall:  0.25555555555555554
        f1:  0.3833333333333333
<==
```

Results II

```
==> Bidder:  Films (bidder1@localhost)
    Got 66 documents while giving 106 bids and spent overall
    806 money (average 12.21 per document).
    Got value of 1696 and overall value of sold documents 1356,
    missed -340 value
    Saved 890 money, by using the strategy 'SaveMoneyBidder'
    (value 1696, payed 806, ratio 2.10).
    Reduced the possible number of query sets for the competitor
    to 1 (queries_i).
<==
==> Bidder:  Cities (bidder2@localhost)
    Got 40 documents while giving 83 bids and spent overall
    687 money (average 17.18 per document).
    Got value of 687 and overall value of sold documents 1278,
    missed 591 value
<==
==> Responder:  Films (bidder1@localhost)
    overall_reward:  81
<==
==> Responder:  Cities (bidder2@localhost)
    overall_reward:  43
```

Results III

```
==> Auctioneer
    All 126 documents finished and got overall 1493 money.
    Top Ten Prices:
        Amarillo, Texas 45
        Indianapolis 34
        Yonkers, New York 21
    Documents Sold to:
        bidder1@localhost - Films
            Lost 0 money for overpaid documents.
                Fiat; Christmas dinner; Denmark; ...  Transformers:
                Age of Extinction; ...  Peach; Pineapple; ...
        bidder2@localhost - Cities
            Lost 5 money for overpaid documents.
                Kiwifruit; Grape; Christmas;
                 ...  Montenegro; Estonia; ...
        nobody
                 Watermelon; San Antonio; ...
                 Flat peach; Christmas decoration
<==
```

Feedback

Any feedback regarding organisation, exercises, etc.?