Amelia Shepherd, M.D. is a fictional character on Grey’s Anatomy, portrayed by Caterina Scorsone. In her debut appearance, Amelia visited her former sister-in-law.
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Coreference Resolution
Mention Ranking Models

Amelia Shepherd  Caterina Scorsone  her  Amelia

her
Mention Ranking Models
Mention Ranking Models

Impractical for long documents!
Entity-Mention Models

Amelia Shepherd
Caterina Scorsonone

Entities
Entity-Mention Models

Entities

Amelia Shepherd

Caterina Scorsone

her
Entity-Mention Models

Number of entities can be quite large!

Fixed-size Memory
PeTra
IG = Ignore, OW = Overwrite, CR = Coreference
IG = Ignore, OW = Overwrite, CR = Coreference
IG = Ignore, OW = Overwrite, CR = Coreference
Ideal Run

IG = Ignore, OW = Overwrite, CR = Coreference
Ideal Run

IG = Ignore, OW = Overwrite, CR = Coreference
Model Details

Key Outputs:
- $e_t$ Entity Probability
- $o_t$ Overwrite Prob. Vector
- $c_t$ Coreference Prob. Vector
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Most tokens don’t refer to people!
Penalize high entity probability outside labeled spans.
Results
GAP Results

F-score vs. # of memory cells
GAP Results

F-score vs. # of memory cells for Referential Reader.
GAP Results

The graph shows the F-score for Referential Reader and PeTra as a function of the number of memory cells. The F-score varies with the number of memory cells, indicating performance changes for different configurations.
Amelia Shepherd, M.D. is a fictional character portrayed by Caterina Scorsone. In her debut appearance in season three, Amelia visited her former...
Interpretability
Are the models actually tracking people?
### Tracking People

Are the models *actually tracking people*?

<table>
<thead>
<tr>
<th>What does it mean for memory model to “track people”?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detect all references to people.</td>
</tr>
<tr>
<td>One-to-one correspondence between people and memory cells.</td>
</tr>
</tbody>
</table>
Neef took an individual silver medal at the 1994 European Cup behind Russia's Svetlana Goncharenko and returned the following year to win gold. She was a finalist individually at the 1994 European Championships and came sixth for Scotland at the 1994 Commonwealth Games.
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Conclusion

- Propose a memory model for tracking people with sparse pronoun resolution annotations.

- Outperforms previous approach on both the end task and interpretability measures.

- Future work: Extend this work to longer documents.
References


