1. Problem and Dataset
- Named Entity Disambiguation removes ambiguity between mentions in the text vs. referred entities in our Knowledgebase
- WikidataDisamb(Sloan et al. 2018) dataset
  - derived from Wiki-disamb30
  - Training size 250,000 and Test 10,000

2. Sample Data
- Fitzroy North is a suburb in Melbourne, Victoria, Australia, 4 km north east from Melbourne’s central business district. Its Local Government Area are the Cities of Yarra and Moreland.

3. Models
- RNN Models
- RNN + Attention Models
- RNN + GCN Model

5. Results
- Experiment Results on test dataset for various models

<table>
<thead>
<tr>
<th>Model Description</th>
<th>prec</th>
<th>rec</th>
<th>fl</th>
<th>prec</th>
<th>rec</th>
<th>fl</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRU for both Ytext and Ytext</td>
<td>0.77</td>
<td>0.73</td>
<td>0.75</td>
<td>0.74</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>GRU for Ytext and Bi-LSTM for Ytext</td>
<td>0.80</td>
<td>0.76</td>
<td>0.78</td>
<td>0.77</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>RNN + Conditional Attention</td>
<td>0.84</td>
<td>0.82</td>
<td>0.83</td>
<td>0.83</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>RNN + Basic Attention</td>
<td>0.80</td>
<td>0.81</td>
<td>0.80</td>
<td>0.81</td>
<td>0.80</td>
<td></td>
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<tr>
<td>RNN + Attention on dot scoring function</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
<td>0.88</td>
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<tr>
<td>RNN + Attention on general scoring function</td>
<td>0.90</td>
<td>0.89</td>
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</tr>
<tr>
<td>GCN Based Model for Ytext</td>
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<td>0.85</td>
<td>0.84</td>
<td>0.85</td>
<td>0.82</td>
<td>0.84</td>
</tr>
</tbody>
</table>

7. Future Work
- GCN with multiple hops
- GCN with attention
- Various GCN message passing
- Use the entire 2 million data set
- Make an app given text gives Wiki ids of all entities
- Attention with triplet masking

8. References
- Cetoli 2018
  arxiv.org/pdf/1810.09164.pdf
- Kipf 2017
  arxiv.org/pdf/1609.02907.pdf
- Minh-thang 2015
  arxiv.org/pdf/1508.04025.pdf

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