



Named Entity Disambiguation Boosted With Knowledge Graph

Brian Lin

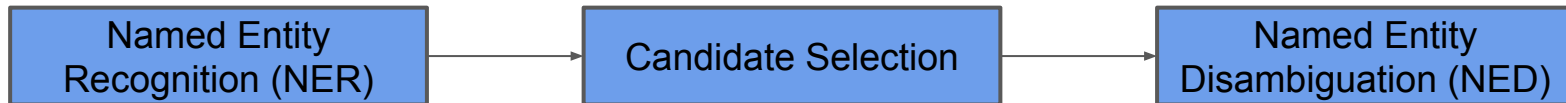
Shane Ong

Cory Williams

Yun Bin (Matteo) Zhang



Overview



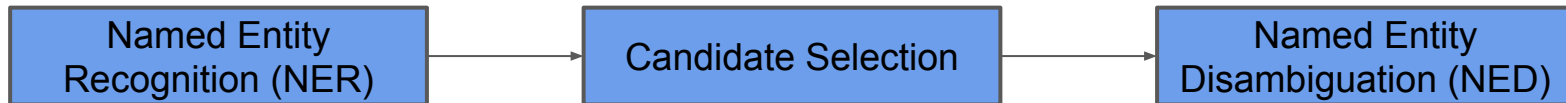
Knowledge Base:

- Jaguar Cars (car)
- Jaguar Land Rover (company)
- Jaguar (animal)

I want to drive my **Jaguar** around the city.



Overview



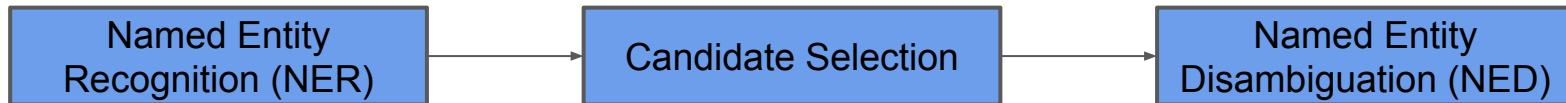
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- Jaguar Cars (car)
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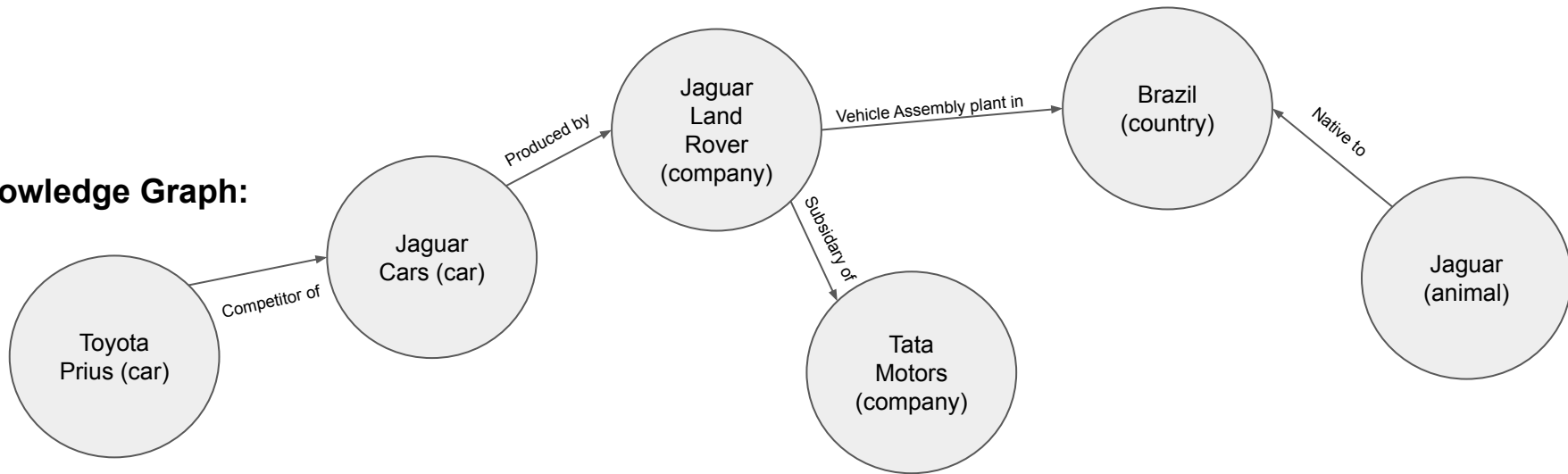
I want to drive my **Jaguar** around the city.



Overview



Knowledge Graph:

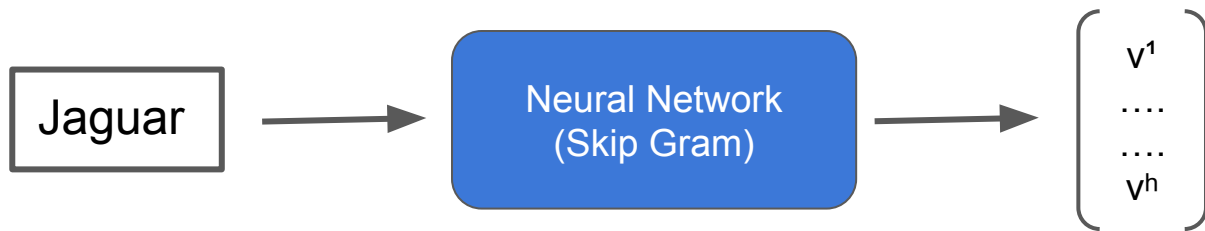


... I want to drive my **Jaguar** around the city. ... It is so much better than my previous **Toyota Prius**



Word Embeddings

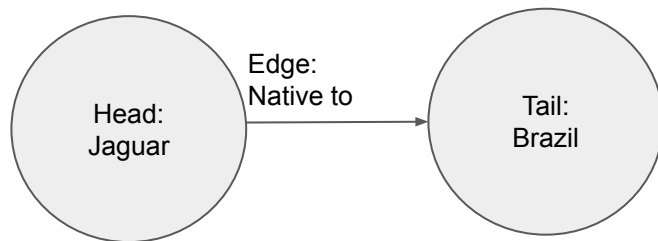
- Vector representations to capture context of a word in a document





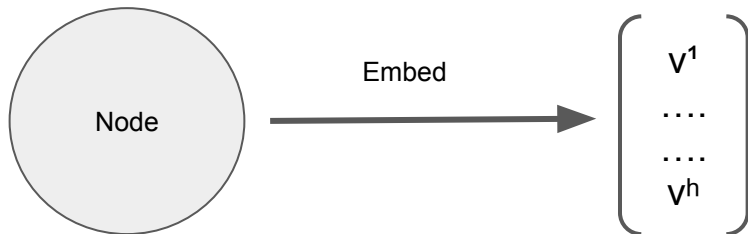
Knowledge Graph Embeddings

- Millions of triplets



stored as (head, edge, tail)

- Capture structural information:

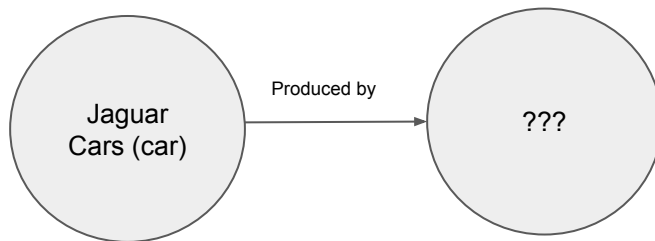




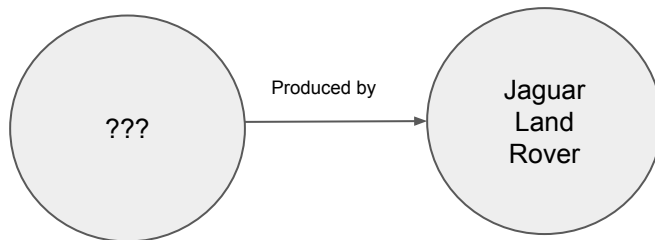
Knowledge Graph Embeddings

Trained on the task of predicting:

- Tail in (head, edge, ???)

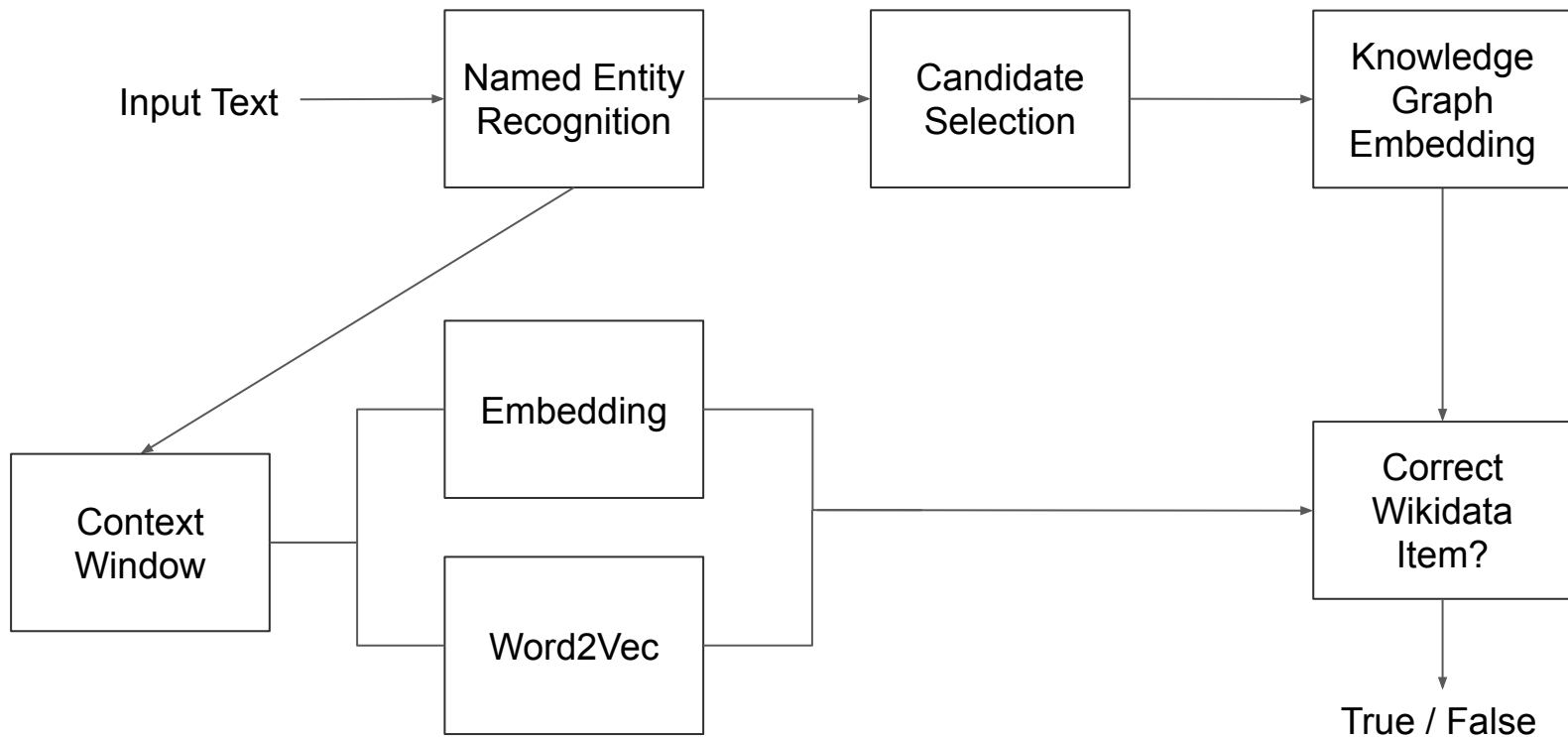


- Head in (???, edge, tail)



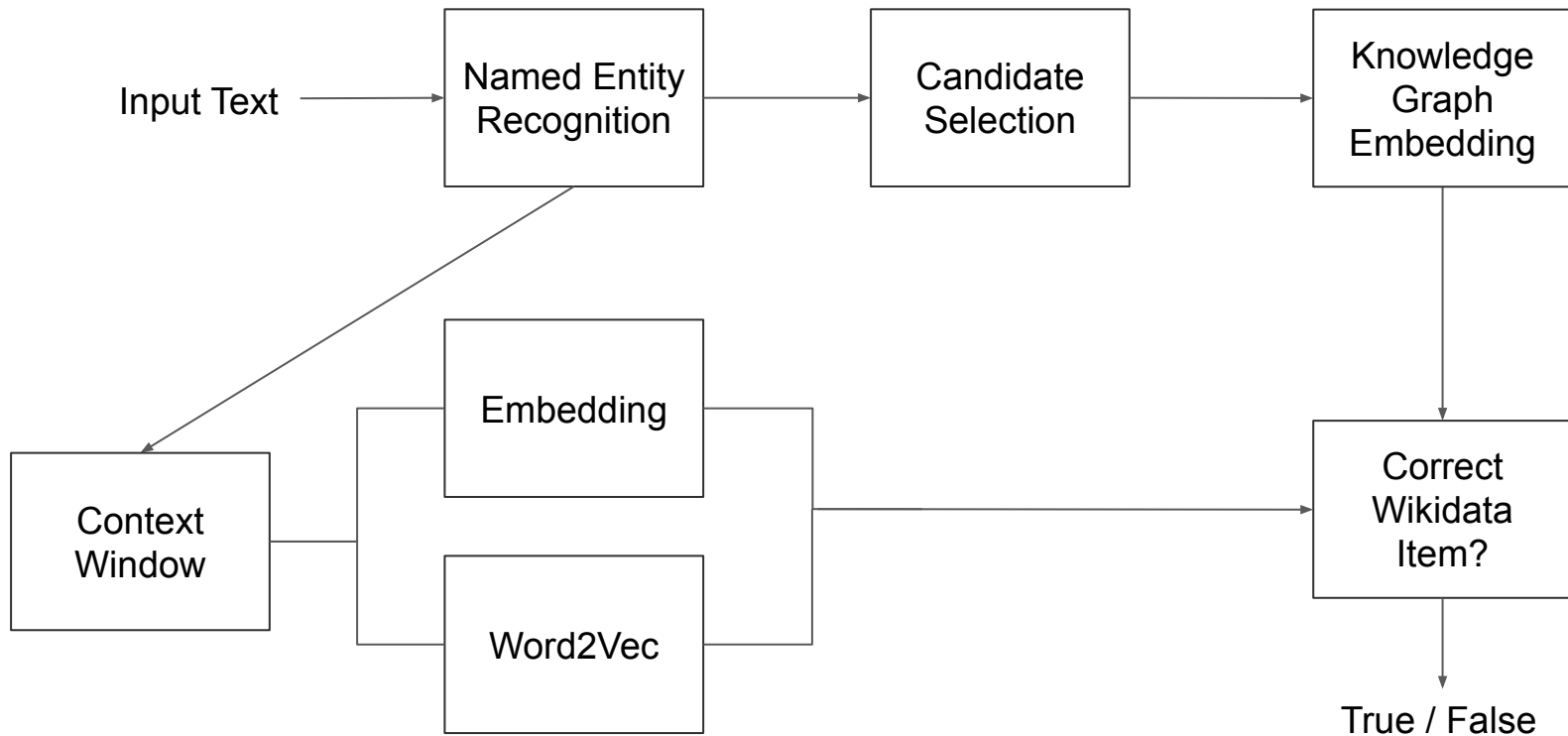


Model 1



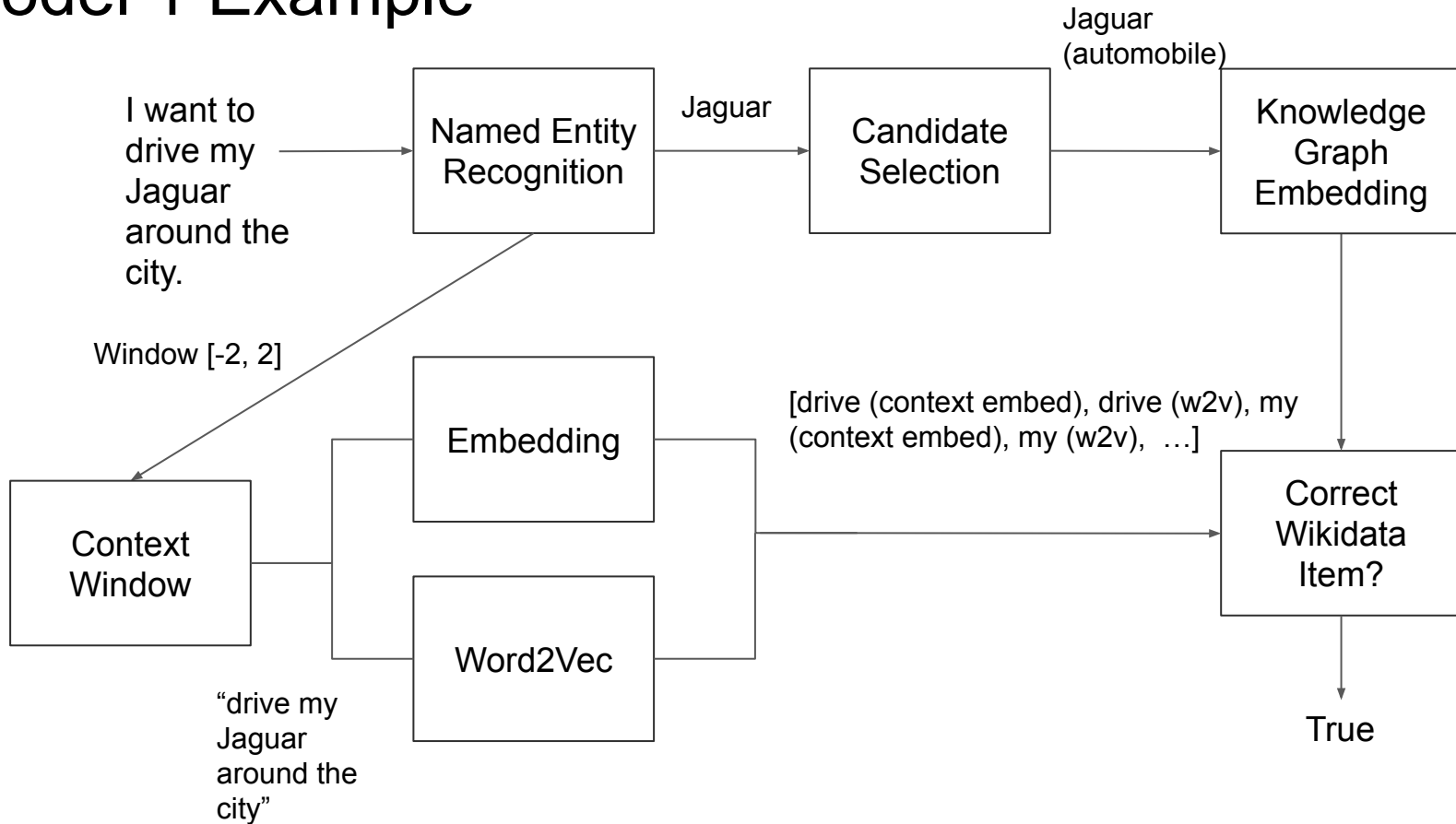


Model 1



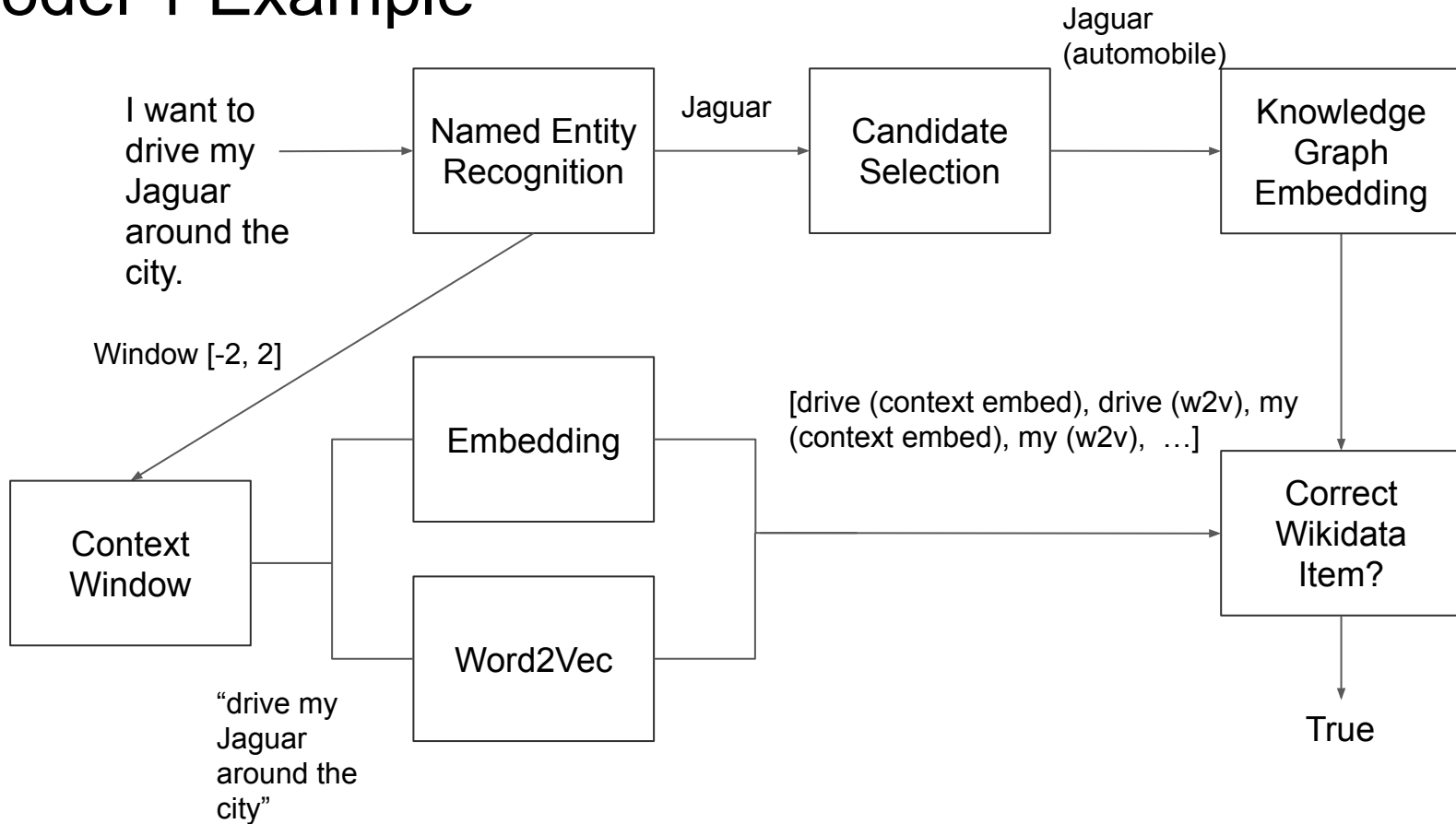


Model 1 Example





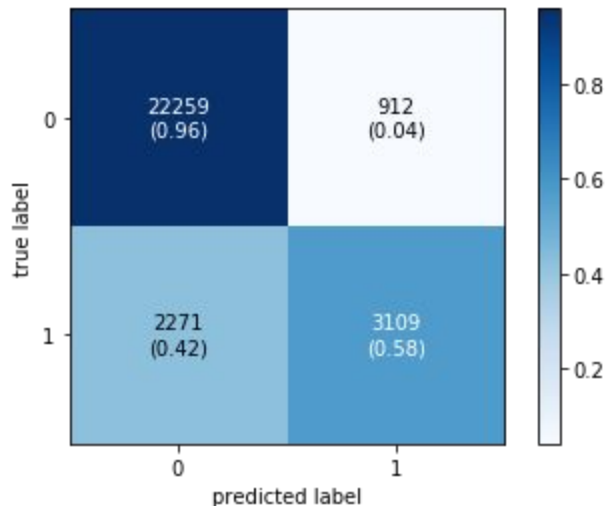
Model 1 Example





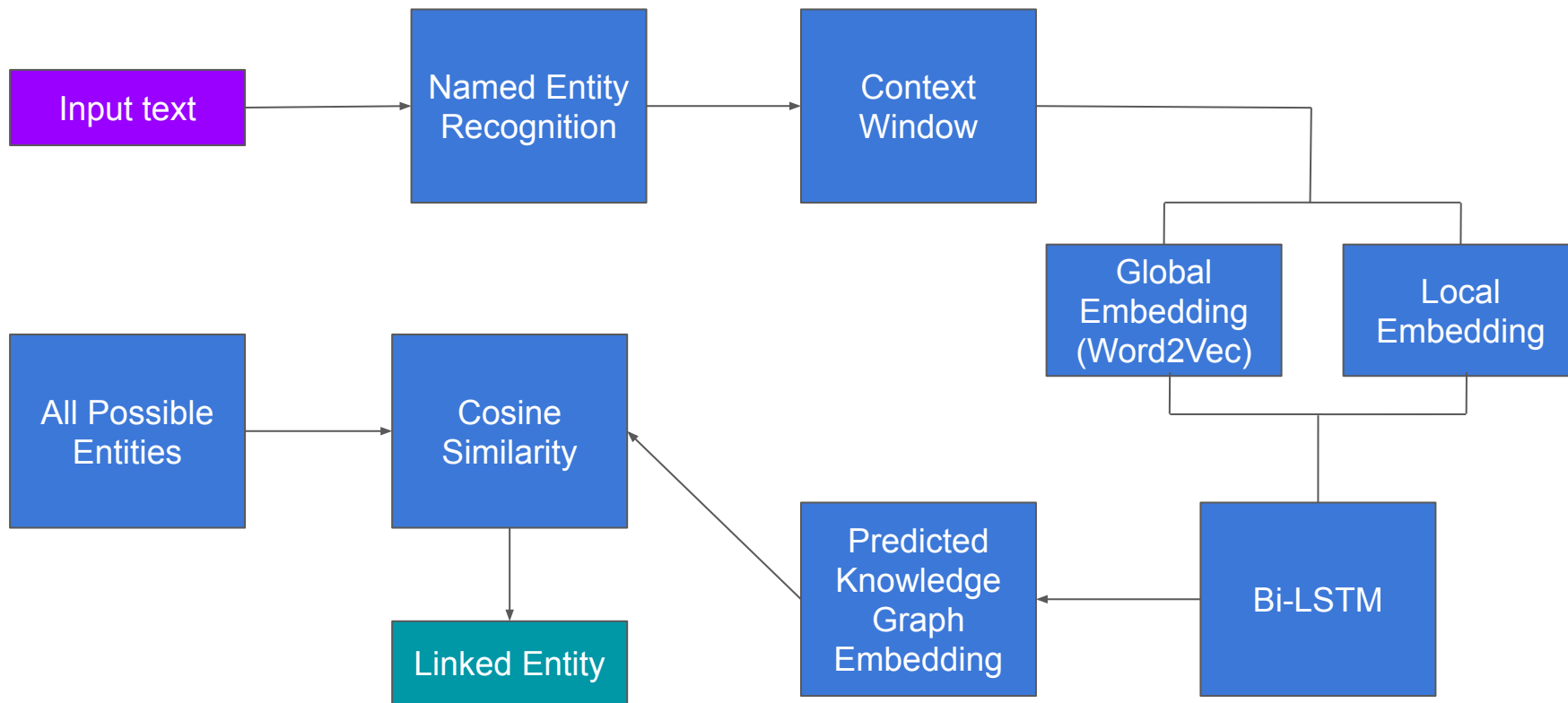
Simplified Model 1 Results

- Sample Dataset: 114204 rows
 - True entity with positive label, false entity with negative label
 - 18.84% positive, 81.16% negative labels
 - Test accuracy: 88.85% (2 Hidden Layer NN)



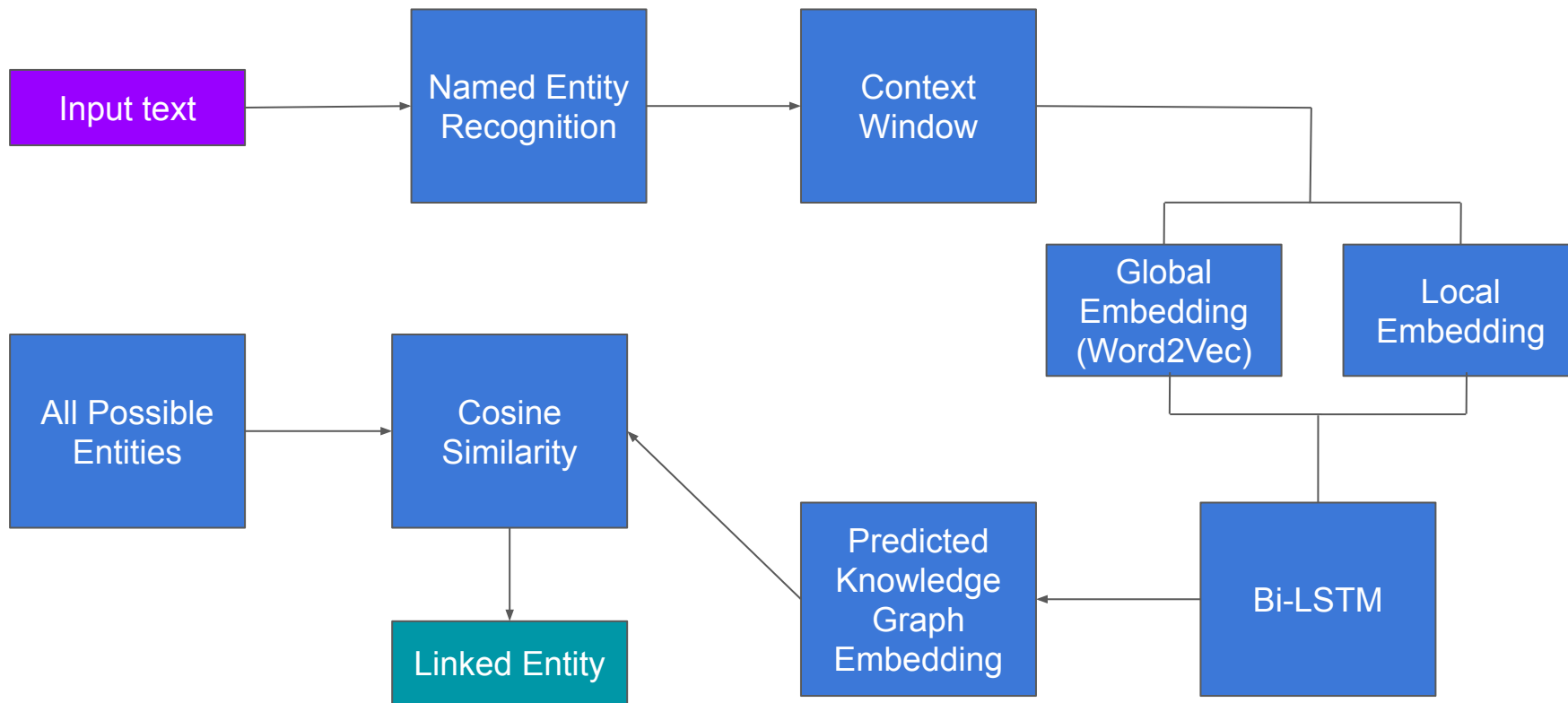


Model 2



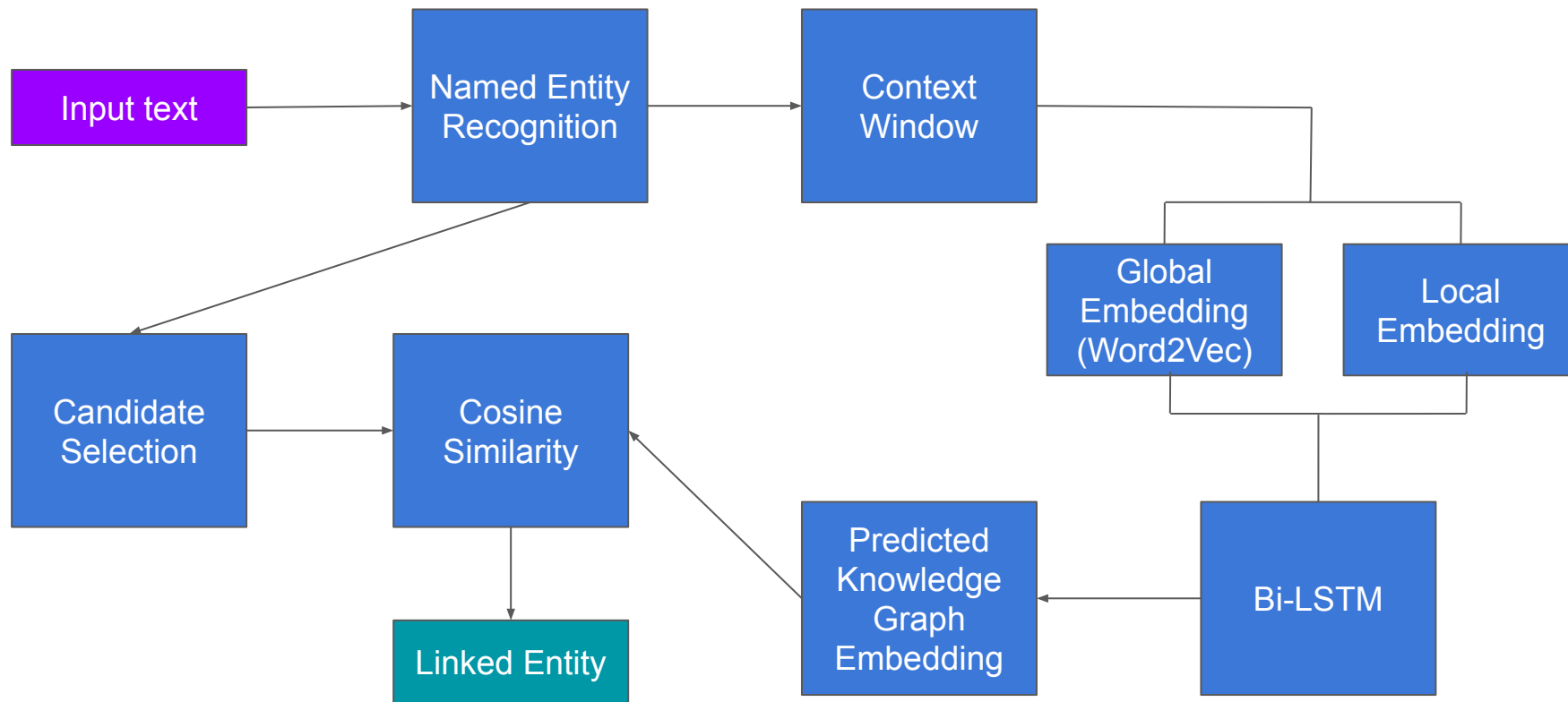


Model 2





Model 2





Model 2

