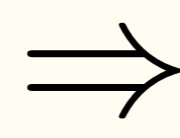


Converting Unstructured Text to Structured Facts

Jared Kushner, credited with helping his father-in-law get elected as US president, is now being probed by the FBI over his meetings with Russians. Born in 1981, 35-year-old Jared Kushner is the son of real estate developer Charles Kushner and graduated from Harvard University in 2003 with a degree in sociology. His admission to the elite university proved controversial, after a book by journalist Daniel Golden – also a Harvard graduate – suggested Kushner and his brother were given a place following a \$2.5 million donation from their father. He married Donald Trump’s daughter Ivanka in 2009, after she converted to Judaism.



Entity1	Entity2	Relation
Donald Trump	USA	president_of
Jared Kushner	Donald Trump	son_in_law_of
Ivanka Trump	Donald Trump	daughter_of
Jared Kushner	Ivanka Trump	married_to
Jared Kushner	Charles Kushner	son_of
Charles Kushner	Real Estate Developer	title_of
Jared Kushner	Harvard	graduate_of
Jared Kushner	New Jersey	born_in

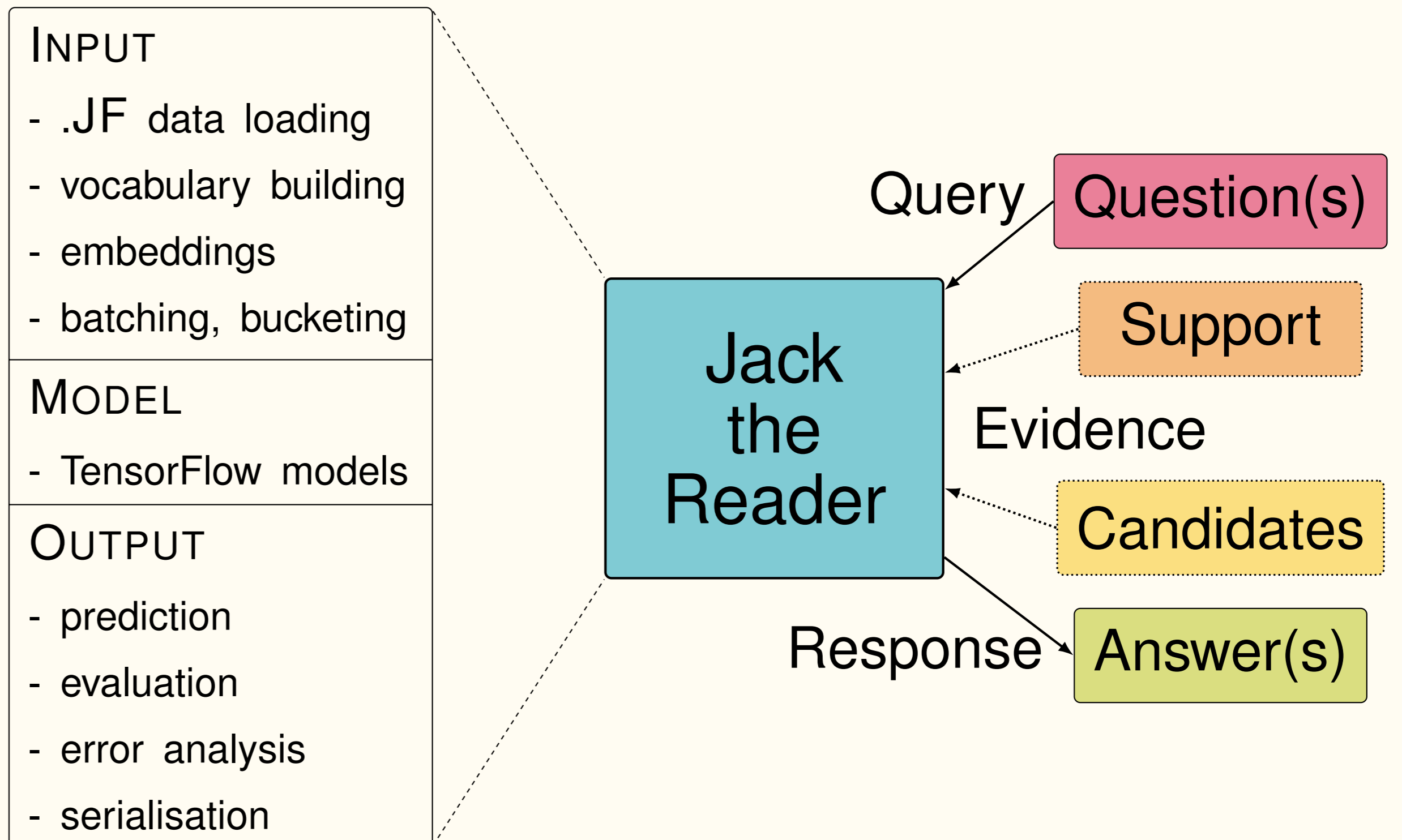
NER and Relation Extraction

Born in New Jersey, 35-year-old Jared Kushner is the son of real estate developer Charles Kushner and graduated from Harvard University in 2003 with a degree in sociology.



born in New Jersey, 35-year-old Jared Kushner is son of real estate developer Charles Kushner and graduate of Harvard University in 2003 with a degree in sociology.

JTR



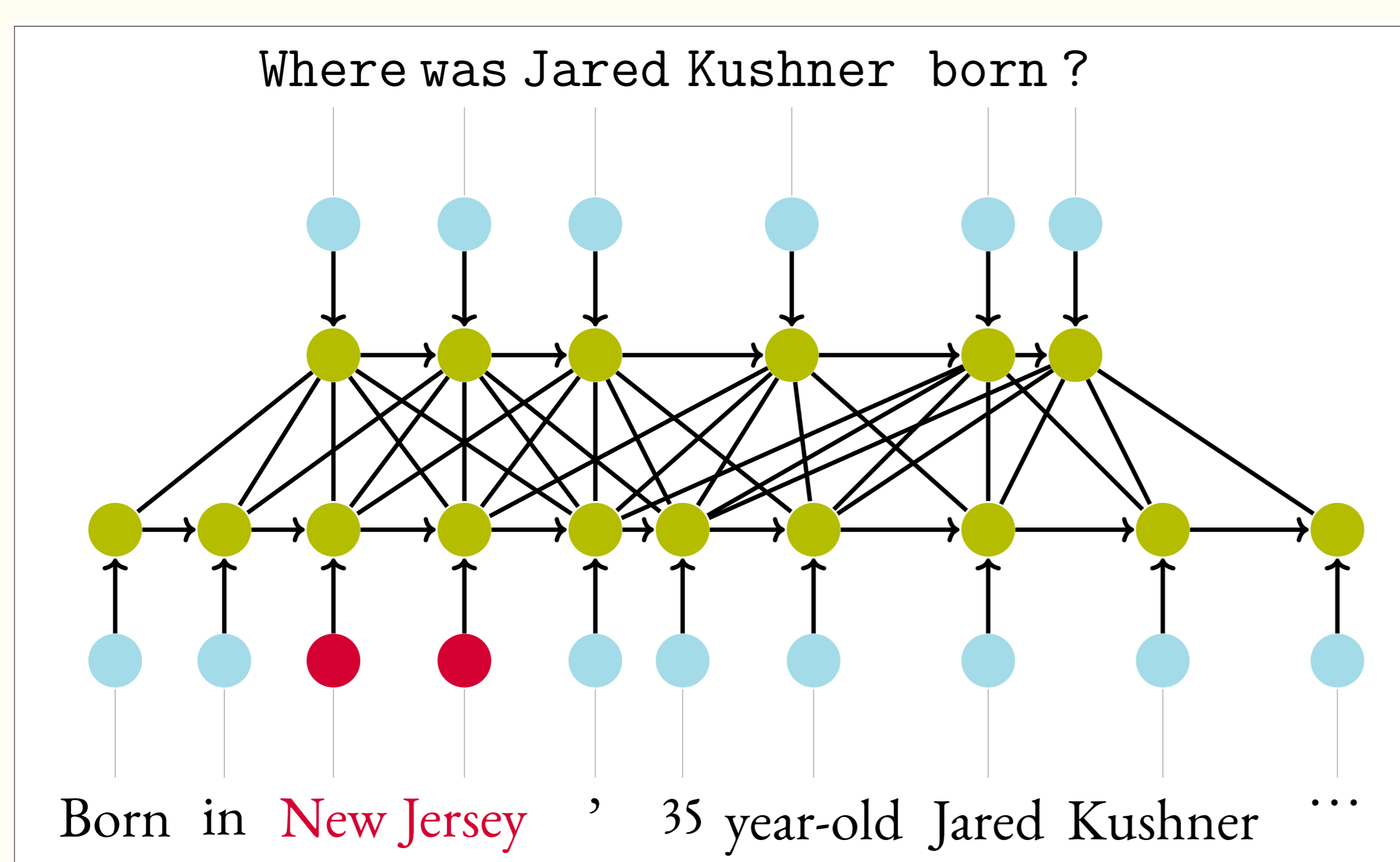
Relation Extraction Models

Matrix Factorisation.

	is the son of	graduated from	son_of	graduate_of
Jared Kushner	1	0	1	0
Charles Kushner				
Donald Trump	1	0	1	0
Fred Trump				
Jared Kushner	0	1	0	1
Harvard				
Donald Trump	0	1	0	1
Wharton				

Matrix factorisation techniques can be used to identify the correlations between surface patterns (e.g. is the son of) and KB relations (e.g. son_of). This then allows us to predict new KB entries based on the evidence we find in text.

Neural Question Answering.



Translating knowledge base relations into natural language questions allows us to apply sophisticated models from the Question Answering domain.

Knowledge Base Applications

Entity1	Entity2	Relation
Donald Trump	USA	president_of
Jared Kushner	Donald Trump	son_in_law_of
Ivanka Trump	Donald Trump	daughter_of
Jared Kushner	Ivanka Trump	married_to
Jared Kushner	Charles Kushner	son_of
Charles Kushner	Real Estate Developer	title_of
Jared Kushner	Harvard	graduate_of
Jared Kushner	New Jersey	born_in

- Querying: Jared Kushner born in ?
- Summarisation: Jared Kushner ?
- Logical analysis: e.g. detecting contradictions.

Fact Checking

Identifying where a claim contradicts a fact in a reliable source is an important element of fact-checking.

