Efficiency-aware Answering of Compositional Questions using Answer Type Prediction

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Motivation
- Question answering over knowledge bases (KB-QA) has gained attention
- Answer typing is a key asset in KB-QA
- Helps to improve efficiency for complex questions

Answer Type Prediction
1. Collect context-aware candidate types using lexical patterns (which scientist won the physics nobel?)
2. Expand candidates with dictionaries
3. Hierarchical classifier selects best types from candidates using confidence threshold
- Surface, syntactic and embedding-based features
- Training data created using distant supervision
- Resources: KB, type system, question benchmarks

Compositional Questions
1. Decompose question into simple sub-questions using syntactic patterns on dependency trees
2. Predict answer types for sub-questions and find fine-grained compatible types between sub-questions
3. Use this reasoning for stitching KB-queries from sub-questions and execute only stitched queries over KB!!

Results
Examples of compositional questions that could only be answered with the answer typing module:
- “who played for ac milan and inter milan?”
- “in which country where the adidas and puma footwear founded?”
- “who is the president of the us who played in bedtime for bonzo?”

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