CS – 549

Paper Review – QA-GNN: Reasoning with Language Models and Knowledge Graphs for Question Answering

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- **What is the problem discussed in the paper?**
  The answering of questions using pre-trained language models (LMs) and knowledge graphs are difficult because of two challenges:
  1) Identifying relevant knowledge from large Knowledge Graphs
  2) Performing joint reasoning over the Question-and-Answer context and Knowledge Graphs.

- **Why is it important?**
  Question answering systems must be able to access relevant knowledge and reason over it. Typically, knowledge can be implicitly encoded in large LMs and KGs and it is important to understand the information which is being passed by the models.

- **What are the main ideas of the proposed solution for the problem?**
  To address the challenges the authors have proposed a new model with two key innovations:
  1) Relevance scoring, where we use LMs to estimate the importance of Knowledge Graph nodes relative to the given QA context.
  2) Joint reasoning, where we connect the QA context and Knowledge Graph to form a joint graph, and mutually update their representations through graph neural networks.

- **What are the shortcomings of the proposed solution?**
  The authors only try to answer natural language questions using knowledge from pre-trained LM and a structured KG. But there will be few cases when it can fail or incompatible to extract the knowledge and answer the questions correctly.