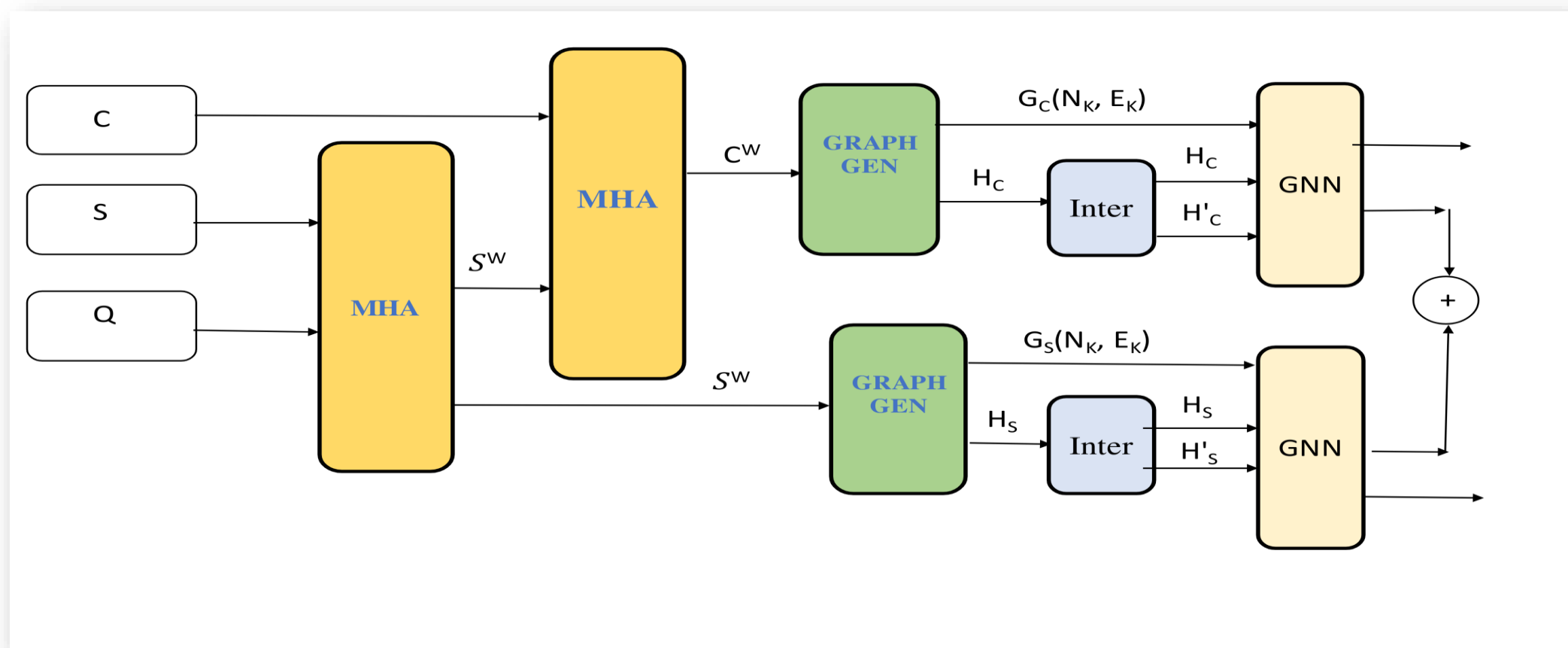


CausalQA: A Causal Framework for Question Answering

SCSE21-0526

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Project Objectives:

Question Answering models have performed very well on current benchmarks. However, they are not **interpretable**. This poses a problem in recent times as people are unaware of the weights that were responsible for the outcome. This project aims to provide an **interpretable causal graph-based question** answering system which achieves comparable performance to current state of the art

Why Causal Based Question Answering?

Causality provides an interpretable model in the form of **causal graphs**. Each variable in the causal graph and the directions of the edges can tell us the causal variable and its effect on the other variables. This helps justify the answer generated by the QA model.

Model	Ropes	NewsQA
CausalQA	0.745	0.628
UnifiedQA (finetuned)	0.814	0.665
Roberta	0.6411	0.603

Table 1: The table represents our models results against state of the art . **CausalQA** is our model and performs comparatively good against **UnifiedQA** and better than Roberta while on **NewsQA** the difference is minimal

Algorithm Outline

- Pass Context, Situation and Question to Attention Model (**MHA**)
- Pass the output from each attention block to the graph generation model (**GRAPH GEN**)
- Pass attended context to graph generation for context
- Pass attended situation to graph generation for situation
- Intervene on the adjacency matrix by removing certain edge (**INTER**)
- Pass the adjacency matrix from both to Graph Convolutional network (**GNN**)
- Get the embedding and compare to situation and context to get answer.