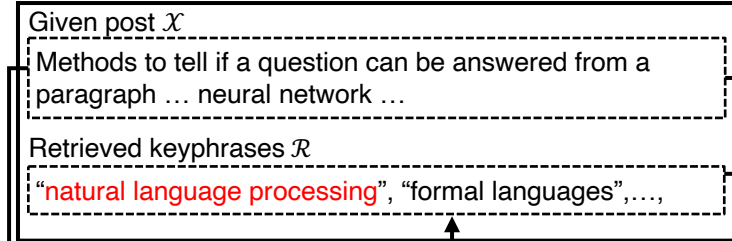
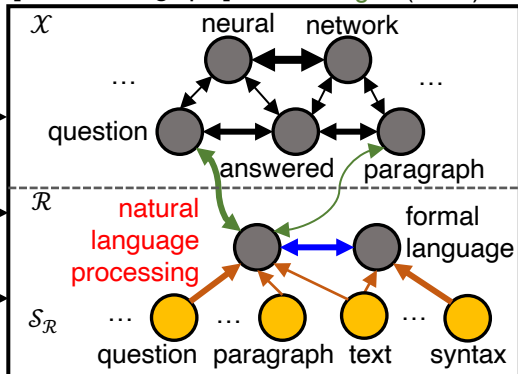


(a) Social Post (Closed Set \mathcal{Y})

Structured document \mathcal{X}^+



[Connected graph]; Green edges (\longleftrightarrow) connect two graphs.

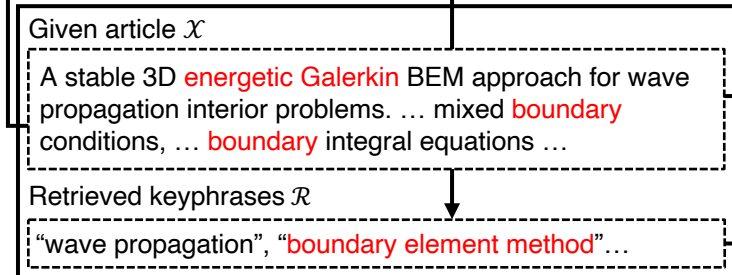


1. Retrieve \mathcal{R}
from existing keyphrases

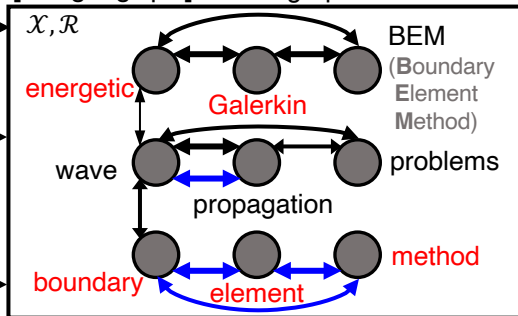
2. Integrate \mathcal{R} with \mathcal{X}
(construct graph)

(b) Scientific Article (Open Set \mathcal{Y})

Structured document \mathcal{X}^+



[Merged graph]; A multigraph



Copied keyphrase
“natural language processing”
from \mathcal{R} .

4. Decode \mathcal{Y}

3. Encode graph

4. Decode \mathcal{Y}

Novel keyphrase
“energetic Galerkin
boundary element method”
by combining words in \mathcal{X}, \mathcal{R} .