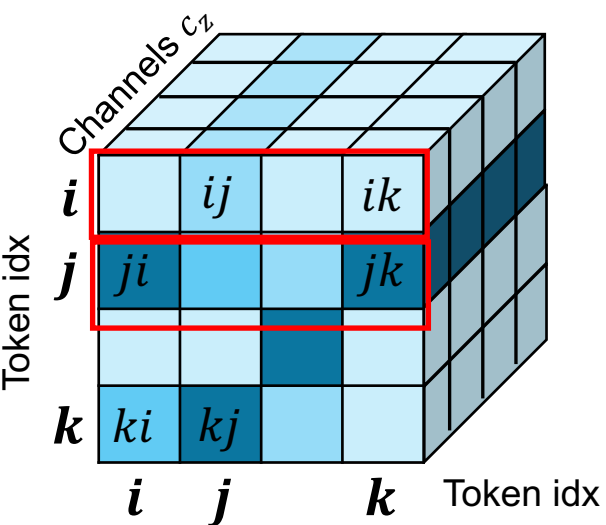


$$\vec{ij} \leq \vec{ik} + \vec{jk} \quad \text{Triangle Inequality}$$

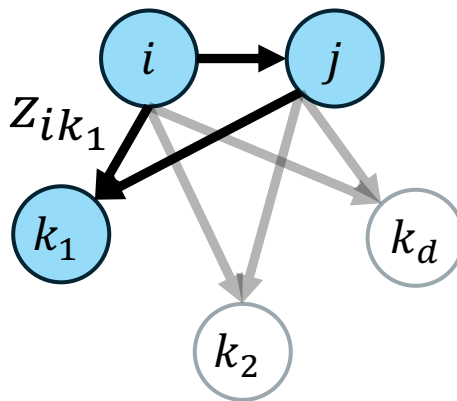
Pair representations are directional

$$z_{ij} \neq z_{ji}$$

Pair representation z



Updating z_{ij} using info. from outgoing edges



How do i and j tokens relate to each k token ?

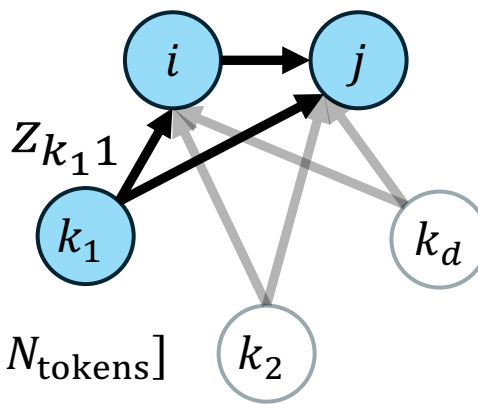
$$d_{ij} < d_{ik_1} + d_{jk_1}$$

⋮

$$d_{ij} < d_{ik_d} + d_{jk_d}$$

$$d_{ij} < \sum_k (d_{ik_d} + d_{jk_d})$$

Updating z_{ij} using info. from incoming edges



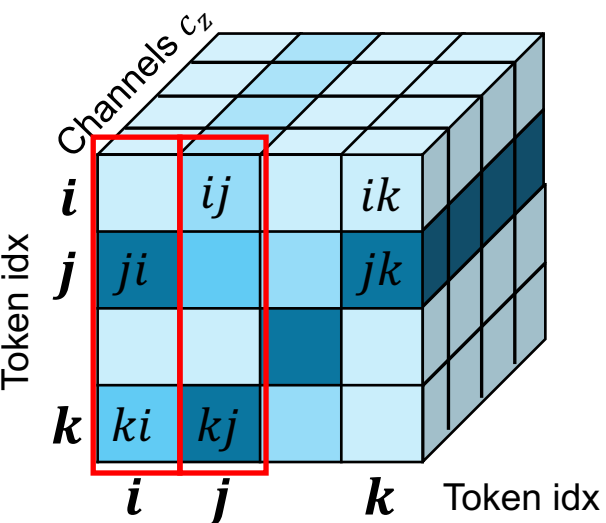
How does each k token relate to i and j tokens ?

$$d_{ij} < d_{k_1i} + d_{k_1j}$$

⋮

$$d_{ij} < d_{k_d i} + d_{k_d j}$$

$$d_{ij} < \sum_k (d_{k_d i} + d_{k_d j})$$



$$d \in [1, N_{\text{tokens}}]$$