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Week 4 Summary

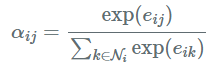
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In the article “Graph Attention Networks”, the authors present graph attention networks (GATS), which is a neural network architecture that operate on graph-structured data, leveraging masked self-attentional layers to address the shortcomings of prior methods based on graph convolutions or their approximations. The idea of GATS is to compute the hidden representations of each node by attending over its neighbors, according to self-attention strategy. Because of this, it has following properties:

* The computation is efficient because it is parallelizable across nodes and their neighbors as pairs.
* It can be applied to nodes having different degrees by specifying their weights to the neighbors.
* It is applicable to inductive learning problems.

Compared to the recent works on graph neural network, it can deal with variable sized inputs, focus on the most relevant parts of the input to make decisions.

The final representation of GATS is A picture containing shape

Description automatically generatedwhere is the weighting factor of node j’s features to node I, and W is a weight matrix. The is calculated by SoftMax function -  where is the unnormalized coefficients across pairs of nodes i and j based on their features. The equation for is. For the experiment, the GATS model achieved state-of-the-art results across four graph benchmarks, which are Cora, Citeseer, Pubmed, and protein-protein interaction dataset.