

# Review of paper – Graph Attention Networks

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## Summary of the paper (3-4 sentences)

The paper introduces a new method called Graph Attention Networks (GATs), which can be used on graph structured data. Using masked self-attention can it avoid the shortcomings of graph convolution networks. We can specify different weights to neighborhoods' nodes without requiring any matrix or graph structure by stacking layers to enable nodes to attend over their neighborhoods' features.

## Main contributions (2-3 bullet points)

1. Introduce masked self-attentional layers to improve the shortcomings of graph convolution. Assign weights to different neighbouring nodes without matrix operations or graph structure.
2. We can specify weights to different degrees of graph nodes. The model can be applied to inductive learning, including invisible (or not clear) graphs.
3. Achieving state-of-the-art results on four datasets: Cora, Citeseer, Pubmed, and protein interaction.

## Positive and negative points (2-3 points each)

1. Positive: Efficient calculation, not require costly matrix operations, and is parallelizable across all nodes in the graph. Allows for assigning different importance to different nodes within a neighborhood while dealing with different sized neighborhood. Does not depend on knowing the entire graph structure upfront.
2. Negative: Only works on single networks, on networks modeling a single type of relation of nodes.

## Unclear (2-3 points)

1. Is it able to be used in graph classification? How?
2. The differences of procedures between directed graph and undirected graph.