DL Lab 06

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Before change N value graph :

A network of lines and dots

Description automatically generated

A screenshot of a computer code

Description automatically generated

A graph of a graph

Description automatically generated with medium confidence

2.

* Supervised learning, self-supervised learning, and semi-supervised learning are all types of machine learning approaches, but they differ in the amount and type of labeled data they require. **Supervised learning** relies on a large, labeled dataset where each input has a corresponding output or label. The model is trained to map inputs to outputs based on this labeled data, making it effective for tasks like classification or regression. In contrast, **self-supervised learning** does not require labeled data. Instead, it generates labels from the data itself by setting up pretext tasks, such as predicting missing parts of an image or completing masked portions of text, which helps the model learn useful representations. **Semi-supervised learning**, on the other hand, uses a combination of labeled and unlabeled data. Typically, a small amount of labeled data is combined with a larger amount of unlabeled data. The model learns patterns from both types of data, improving its performance when labeled data is scarce.
* The distinction between **transductive learning** and **inductive learning** lies in their generalization approach. **Inductive learning** aims to learn a general rule from the training data that can be applied to unseen, out-of-sample instances. The goal is to create a model that can make predictions on any new data, even if it wasn't part of the training set. **Transductive learning**, by contrast, does not generalize to unseen data. Instead, it focuses on making predictions for specific instances within the given dataset (including test data) without trying to build a general model. Transductive learning is often used when the goal is to optimize predictions for a known set of points, like in some semi-supervised learning scenarios.

3.

GAT introduces attention mechanisms into the GNN framework to weigh the importance of different neighbors dynamicall

GCN is a specific type of Message Passing GNN where the convolution operation is applied to graphs. It simplifies the message passing mechanism by using a fixed function for message aggregation and node updating.

Message Passing GNNs form a broad class of neural network architectures designed for learning on graph-structured data. The core idea is to iteratively aggregate information from a node's neighbors and update the node's representation based on this aggregated information.