DL lab 6 – Graph Neural Networks

1. Upload the NetworkX jupyter notebook file (i.e.,NetworkX\_tutorial.ipynb) to google colab root directory.



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

* + learning, self-supervised learning and semi-supervised learning methods

**supervised learning**

**laba all data and taring call supervised learning**

**self supervised learning**

**without lab data set training**

**sem supervised learning**

* + Explain the differences between transductive learning and inductive learning.

**Key Differences**

* **Generalization vs. Specificity**: Inductive learning aims for broad generalization, while transductive learning is more focused on specific cases.
* **Training and Testing**: Inductive learning separates the training and testing phases completely, whereas transductive learning considers both during the learning process.
* **Use of Unlabeled Data**: Transductive learning effectively utilizes both labeled and unlabeled data to improve predictions for specific instances, which is less common in inductive learning.

Explain the differences between Message Passing GNN, graph convolution network (GCN), graph attention network (GAT) and GraphSAGE. Write the answers in the word file.

**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.**

**Submission.**

Download the final modified notebook files (all 2 jupyter notebooks). Add these notebooks and the word file to a new zip file. Upload this zip file to the courseweb submission link. The file name should be your registration number.