Supplementary Information: Prompt Templates

1 Prompt Templates used in the LLM Framework

This document contains the prompt formats for different learning strategies in our proposed framework: Zero-Shot, One-Shot, Few-Shot, Instruction-based Fine-tuning.

1.1 Zero-Shot Prompt

In the zero-shot approach, we directly instructed LLM to provide the prediction of link existence without any prior examples.

Table 1: Zero-Shot Prompt

Link Prediction Task
Instructions
Based on the following information, determine whether a link exists between two nodes. Respond strictly with either "yes" or "no", and nothing else.
Consider the following attributes:
-Community membership
-Common Neighbor Score (CN)
-Similarity Scores: Salton Similarity Score (SCS), Sorenson, Jaccard, Adamic/Adar Index (AAI), Preferential Attachment (PAS)
-PageRank Scores for both nodes (PR_U and PR_V)
Below is an example of the information and its corresponding prediction to learn from:

statement: "For nodes u with ID 6583 and v with ID 21030, they belong to the same community. They have a common neighbor score (CN) of 0.8421052631578947, and similarity scores of 0.8421052631578947 for salton similarity score (SCS), 0.4210526315789473 for Sorenson, 0.7272727272727273 for Jaccard, 0.4039308631599071 for Adamic/Adar Index (AAI), and 19.0 for Preferential Attachment. The PageRank scores are 0.0002443 for node u (PR_U) and 0.0002189 for node v (PR_V)."
prediction:

1.2 One-Shot Prompt

In one-shot approach, we provided one example from each class (i.e., present edge and missing edge) before the target query.

Table 2: One-Shot Prompt

Link Prediction Task
Instructions
Based on the following information, determine whether a link exists between two nodes. Respond strictly with either "yes" or "no", and nothing else.
Consider the following attributes:
-Community membership
-Common Neighbor Score (CN)
-Similarity Scores: Salton Similarity Score (SCS), Sorenson, Jaccard, Adamic/Adar Index (AAI), Preferential Attachment (PAS)
-PageRank Scores for both nodes (PR_U and PR_V)
Below is an example of the information and its corresponding prediction to learn from:

statement: "For nodes u with ID 13384 and v with ID 22242, they belong to the same community. They have a common neighbor score (CN) of 0.6060915267313265, and similarity scores of 0.6060915267313265 for salton similarity score (SCS), 0.2857142857142857 for Sorenson, 0.4 for Jaccard, 0.5536546824812271 for Adamic/Adar Index (AAI), and 9.899494936611664 for Preferential Attachment. The PageRank scores are 0.0005924 for node u (PR_U) and 0.0002931 for node v (PR_V)."
prediction: yes

statement:"For nodes u with ID 13680 and v with ID 7638, they do not belong to the same community. They have a common neighbor score (CN) of 0.0, and similarity scores of 0.0 for salton similarity score (SCS), 0.0 for Sorenson, 0.0 for Jaccard, 0.0 for Adamic/Adar Index (AAI), and 1.0 for Preferential Attachment. The PageRank scores are 0.0000618 for node u (PR_U) and 0.0000842 for node v (PR_V)."
prediction: no

statement: "For nodes u with ID 6583 and v with ID 21030, they belong to the same community. They have a common neighbor score (CN) of 0.8421052631578947, and similarity scores of 0.8421052631578947 for salton similarity score (SCS), 0.4210526315789473 for Sorenson, 0.7272727272727273 for Jaccard, 0.4039308631599071 for Adamic/Adar Index (AAI), and 19.0 for Preferential Attachment. The PageRank scores are 0.0002443 for node u (PR_U) and 0.0002189 for node v (PR_V)."
prediction:

1.3 Few-shot Prompt

For the few-shot setting, we provided 5 labeled examples per class before the target query, similar to the one-shot approach. However, to keep the document

concise, we do not include all the examples in detail, however the structure is the same as in the one-shot setting.

1.4 Instruction-Based Fine-Tuning Prompt

The overall structure for fine-tuning is similar as we saw before. During training, the *prediction* field contain the label, while we left it blank for the inference

1.4.1 Training Example

Table 3: Training Example

Link Prediction Task
Instructions
Based on the following information, determine whether a link exists between two nodes. Respond strictly with either "yes" or "no", and nothing else.
Consider the following attributes:
-Community membership
-Common Neighbor Score (CN)
-Similarity Scores: Salton Similarity Score (SCS), Sorenson, Jaccard, Adamic/Adar Index (AAI), Preferential Attachment (PAS)
-PageRank Scores for both nodes (PR_U and PR_V)
Below is an example of the information and its corresponding prediction to learn from:

statement: "For nodes u with ID 6583 and v with ID 21030, they belong to the same community. They have a common neighbor score (CN) of 0.8421052631578947, and similarity scores of 0.8421052631578947 for salton similarity score (SCS), 0.4210526315789473 for Sorenson, 0.7272727272727273 for Jaccard, 0.4039308631599071 for Adamic/Adar Index (AAI), and 19.0 for Preferential Attachment. The PageRank scores are 0.0002443 for node u (PR_U) and 0.0002189 for node v (PR_V)."
prediction: "yes"

1.4.2 Inference Example

Table 4: Inference Example

Link Prediction Task
Instructions
Based on the following information, determine whether a link exists between two nodes. Respond strictly with either "yes" or "no", and nothing else.
Consider the following attributes:
-Community membership
-Common Neighbor Score (CN)
-Similarity Scores: Salton Similarity Score (SCS), Sorenson, Jaccard, Adamic/Adar Index (AAI), Preferential Attachment (PAS)
-PageRank Scores for both nodes (PR_U and PR_V)
Below is an example of the information and its corresponding prediction to learn from:

statement: "For nodes u with ID 6583 and v with ID 21030, they belong to the same community. They have a common neighbor score (CN) of 0.8421052631578947, and similarity scores of 0.8421052631578947 for salton similarity score (SCS), 0.4210526315789473 for Sorenson, 0.7272727272727273 for Jaccard, 0.4039308631599071 for Adamic/Adar Index (AAI), and 19.0 for Preferential Attachment. The PageRank scores are 0.0002443 for node u (PR_U) and 0.0002189 for node v (PR_V)."
prediction: