

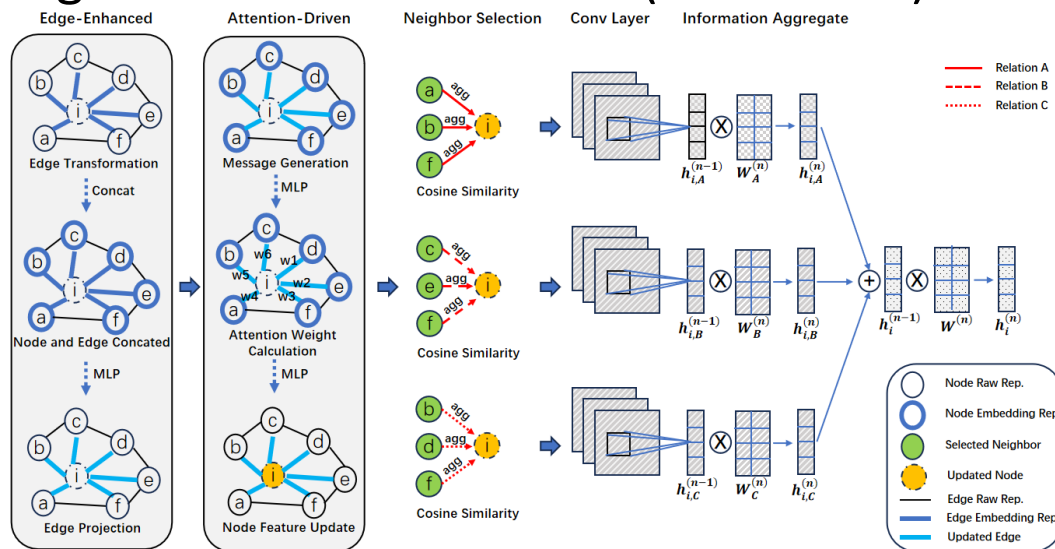
Harnessing Node and Edge Mutual Enhancement for Inductive Graph Fraud Detection

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Problems & Ideas

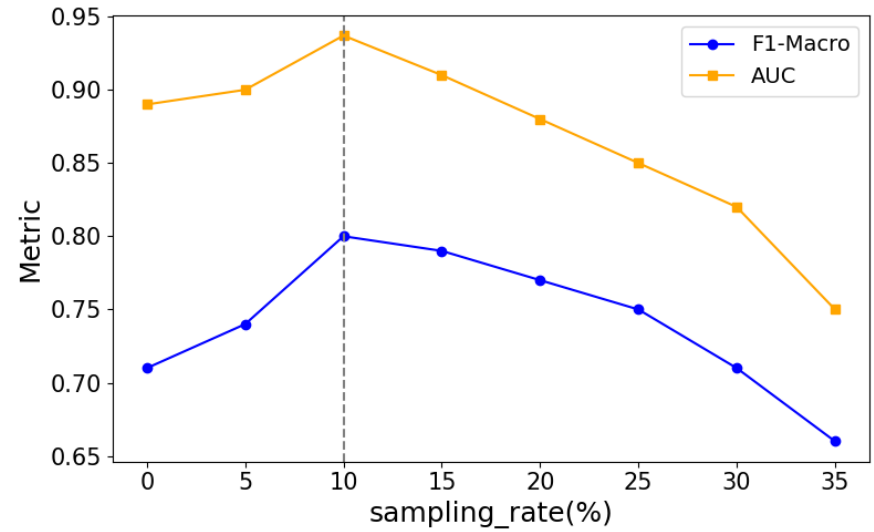
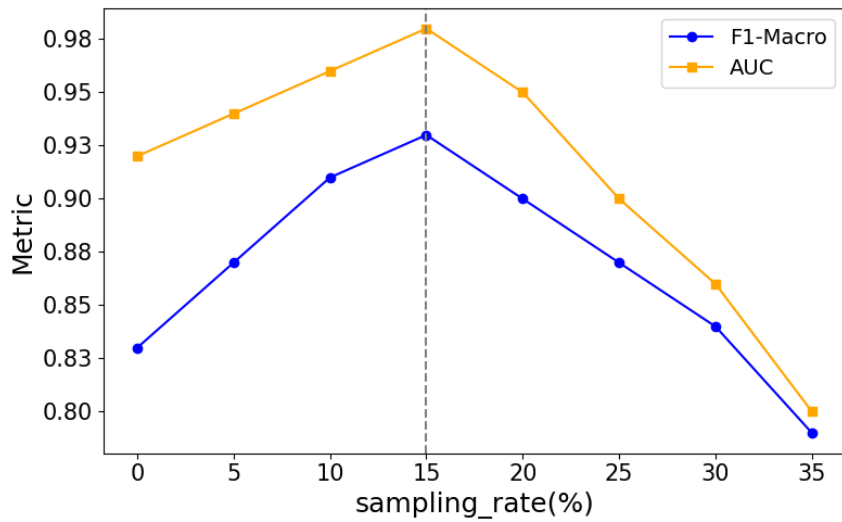
- Problems of conventional credit fraud detection approaches:
 - Existing methods rely on high-quality historical data and limited correlated variables, struggling to handle weak or non-linear features.
 - GNNs oversimplify edge features and use static neighbor selection strategies, limiting their generalization capabilities and potentially missing critical node-to-node relationship details.
- Ideas: Propose the Attention-Driven Graph Neural Network with node and Edge mutual Enhancement (EEAD-GNN).



The framework of the proposed EEAD-GNN model. Integrate inductive learning, advanced edge feature modeling, and attention-driven aggregation.

Main Contributions

- Contributions:
 - Introduce an inductive learning approach, enabling effective generalization to unseen nodes;
 - Utilize an Edge Projection module for edge feature modeling to capture deep relational semantics crucial for fraud detection;
 - Employs attention-driven aggregation with dynamic neighbor selection to produce quality embeddings, suppresses noise, and enhances fraud detection robustness.



Left: The impact of the sampling rate on Amazon. Right: The impact of the sampling rate on Yelpchi.