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## **A REVIEW OF KNOWLEDGE GRAPH AND GRAPH NEURAL NETWORK APPLICATION**

### **Abstract:**

Many learning activities include working with graph data, which offers a wealth of relational information between parts. Modeling physical systems, learning molecular fingerprints, predicting protein interfaces, and diagnosing illnesses all need the use of a model that can learn from graph inputs. In other fields, such as learning from non-structural data such as texts and images, reasoning on extracted structures (such as phrase dependency trees and image scene graphs) is a major topic that requires graph reasoning models. Graph neural networks (GNNs) are neural models that use message transmission between graph nodes to represent graph dependency. Variants of GNNs have recently showed ground-breaking performance on a variety of deep learning tasks.

This paper represents a review of the literature on Knowledge Graphs and Graph Neural Networks, with a particular focus on Graph Embeddings and Graph Neural Networks applications as a powerful tool for organizing structured data and making sense of unstructured data, which can be applied to a variety of real-world problems.

### **Keywords:**

Knowledge Graph, Graph Neural Network, DeepWalk, Node2Vec, Structural Deep Network Embedding

**JEL Classification:** C45