KBN JOURNAL OF DIVERSE RESEARCH

Vol 1. Issue 1 .2024

MULTI-MODAL AND CROSS-DOMAIN FEATURE FUSION FOR ENHANCED DATA ANALYSIS

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Abstract

This paper presents a novel approach to data analysis through multi-modal and cross-domain feature fusion. By integrating diverse data sources and types—such as text, images, and sensor data—our method enhances the ability to extract meaningful insights and improve decision-making processes. We introduce a framework that combines advanced feature extraction techniques with sophisticated fusion algorithms to effectively handle heterogeneous data. The proposed model leverages both supervised and unsupervised learning paradigms to merge features from different domains, optimizing the performance of predictive analytics and data mining tasks. Experimental results demonstrate that our approach significantly outperforms traditional methods in terms of accuracy and robustness, particularly in complex scenarios involving high-dimensional and multi-source data. This work opens new avenues for research and applications in fields ranging from healthcare and finance to autonomous systems, where comprehensive data integration is crucial for advanced analytical capabilities.

Keywords:

Multi-modal Fusion, Cross-domain Integration, Feature Extraction, Predictive Analytics, Data Mining, Heterogeneous Data, Advanced Analytics