Literatture Review :

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1. **RoBERTa-GCN: A Novel Approach for Combating Fake News in Bangla Using Advanced Language Processing and Graph Convolutional Networks :**

The article RoBERTa-GCN: A Novel Approach for Combating Fake News in Bangla introduces a hybrid model combining RoBERTa’s contextual embeddings with Graph Convolutional Networks (GCNs) to detect fake news in the Bangla language. Using the diverse BanFakeNews dataset, the model processes relational data between articles and achieves 98.60% accuracy, outperforming state-of-the-art methods like BERT and BanglaBERT. The approach involves advanced text preprocessing, dynamic graph adaptation, and classification layers, enabling effective identification of misinformation across domains such as politics and entertainment. While limited to Bangla, the study highlights the importance of language-specific solutions for misinformation and proposes future expansion to other South Asian languages and more nuanced misinformation types.

1. **Detection of fake news campaigns using graph convolutional networks:**

The article Detection of Fake News Campaigns Using Graph Convolutional Networks focuses on identifying organized disinformation campaigns by analyzing the diffusion graphs of fake news in social media, rather than relying solely on textual content. The proposed method employs Graph Convolutional Networks (GCNs) to integrate user profiles, social relationships, and diffusion patterns, making the model robust to text manipulation and adaptable across different contexts. Using Twitter data and the FakeNewsNet dataset, diffusion trees are constructed to represent the spread of information, with node features capturing user susceptibility and network connections. The study demonstrates that GCN-based classification outperforms baseline methods in accuracy and precision for detecting astroturfing campaigns. The authors highlight future directions, such as applying the model to other domains and leveraging reinforcement learning for real-time detection.

1. **FakeNews Detection Using Pre-trained Language Models and Graph Convolutional Networks**

This study focuses on detecting fake news using two complementary approaches: a text-based method and a structure-based method. The text-based approach leverages CT-BERT, a pre-trained model fine-tuned on Covid-19-related tweets, to extract textual features from tweet content. Additionally, metadata (e.g., retweet counts, user information, and tweet timestamps) is incorporated to improve classification accuracy. Preprocessing steps, including tokenization, emoji conversion, and Easy Data Augmentation (EDA), help balance the dataset and enhance model performance. For structure-based detection, the authors apply Graph Convolutional Networks (GCNs) to analyze retweet relationships, using first- and second-order proximity matrices to capture both direct and indirect tweet connections. Experimental results reveal that combining textual data with metadata in the text-based approach outperforms other methods, with MCC scores of 0.396 for binary classification and 0.419 for multi-class classification. In contrast, the structure-based approach achieves lower performance, even when metadata is added. The study concludes that textual data is more critical for fake news detection, while graph features offer supplementary insights. Future work will explore additional external resources to improve the accuracy of misinformation detection.

**Knowledge-aware Multi-modal Adaptive Graph Convolutional Networks for Fake News Detection**

The article proposes a framework called Knowledge-aware Multi-modal Adaptive Graph Convolutional Network (KMAGCN) for detecting fake news by addressing three key challenges: representing complex social media posts, ensuring model flexibility for various contexts, and integrating auxiliary information such as textual, visual, and knowledge-based data. KMAGCN represents posts as graphs and incorporates knowledge from external knowledge bases (e.g., YAGO, Probase) to enhance semantic understanding. The framework dynamically learns graph structures through three types of graphs—global, parameterized, and individual—to capture both general and specific relationships within posts. Textual and visual features are extracted and aligned using GCN layers and a visual attention mechanism, respectively, forming a comprehensive multi-modal representation that is fed into a binary classifier for fake news detection. Experimental results on datasets such as Weibo, Twitter, and PHEME demonstrate that KMAGCN outperforms existing single-modal and multi-modal models, with each framework component contributing to its success. The authors suggest future work on improving visual and knowledge feature extraction and enhancing model interpretability.

**GRAPH CONVOLUTIONAL NETWORKS APPLIED TO FAKENEWS: CORONA VIRUS AND 5G CONSPIRACY (2021)**

This study focuses on using Graph Convolutional Networks (GCNs) to detect fake news, particularly conspiracy theories linking 5G networks to COVID-19. The authors explored the MediaEval 2020 dataset, which categorizes tweets into non-conspiracy, 5G-corona conspiracy, and other conspiracy groups. The paper employed Natural Language Processing (NLP) techniques combined with BERT-based embeddings and GCNs to classify these tweets. The models achieved a Matthews Correlation Coefficient (MCC) score of 0.4975. The authors emphasize the need for early detection of misinformation to mitigate its spread, leveraging transfer learning from tasks related to fake news and propaganda.

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**FAKE NEWS DETECTION: A SURVEY OF GRAPH NEURAL NETWORK METHODS (2023)**

This comprehensive review explores the use of Graph Neural Networks (GNNs) for fake news detection. The paper highlights how GNNs integrate content, propagation, and social context features, outperforming traditional machine learning methods that rely heavily on text data. The authors categorize detection methods based on GNN variants such as Graph Convolutional Networks (GCNs), Graph Attention Networks (GATs), and Graph Autoencoders (GAEs). They also discuss challenges like data sparsity and the lack of labeled datasets. The survey emphasizes the need for robust models that can handle diverse datasets and offers future research directions to improve scalability and model interpretability.