T5-

artificial neural networks have shown promising results in a variety of NLU tasks . conventional neural-based NLU models are criticized for high energy consumption . this paper proposes a potential direction to alleviate this bottleneck by proposing a spiking encoder . the core of our model is bi-directional spiking neural network (SNN), which transforms numeric values into discrete spiking signals. our model achieves comparable classification and translation accuracy to advanced Transformer baseline, whereas significantly reduces the required computational

Gpt-4 In recent years, the growing field of Natural Language Processing (NLP) has significantly enhanced the ability to analyze and represent human language through computational techniques. This study specifically explores the application of transformer models such as BERT, RoBERTa, DistilBERT, ALBERT, and ELECTRA in the context of Construction Supply Chain Risk Management (CSCRM). These models are utilized to perform Named Entity Recognition (NER) on news articles to identify and classify entities related to supply chain risks, thereby providing insights into vulnerabilities within this sector.

Previous research highlights significant advances in NLP, encompassing a wide range of components from parsing and part-of-speech tagging to machine translation and conversation systems. Among the transformer models evaluated in this study, RoBERTa stands out by achieving the highest average F1 score of 0.8580, indicating its superior balance in precision and recall for NER tasks within the Australian construction supply chain context. This underscores the potential of NLP-driven solutions to revolutionize SCM, particularly in geo-specific settings.

Numerous studies have addressed this topic with varying approaches, yet this research contributes uniquely by demonstrating the practical applications of advanced transformer models in managing risks in complex and risk-prone sectors like construction supply chains. The findings suggest that leveraging such sophisticated NLP technologies can significantly aid in the early detection and mitigation of potential supply chain disruptions.

Overall, this study not only advances our understanding of the capabilities of various transformer models in a critical application area but also sets the stage for future research to explore the integration of these models into real-world SCM systems, potentially leading to more resilient and efficient supply chains.

Gpt-3 This paper addresses the issue of high energy consumption in conventional neural-based natural language understanding (NLU) models by introducing a spiking encoder based on bi-directional spiking neural networks (SNN). The SNN transforms numeric values into discrete spiking signals, replacing costly multiplications with more affordable additive operations. The study evaluates the model on sentiment classification and machine translation tasks, demonstrating comparable accuracy to advanced Transformer models while drastically reducing computational energy requirements to just 0.82%. This innovative approach offers a potential solution to the energy efficiency challenge in NLU tasks, making it more feasible for widespread application in low-power devices like smartphones and intelligent terminals. By leveraging the efficiency of spiking neural networks, this research paves the way for energy-preserving NLU systems that maintain high performance levels, marking a significant advancement in the field of artificial intelligence and natural language processing.

gemini-To address the energy consumption issue in natural language understanding (NLU), a spiking encoder based on bi-directional spiking neural networks (SNN) is proposed. The SNN transforms numeric values into spiking signals, reducing energy-intensive multiplications. Experiments show that the encoder achieves comparable accuracy on sentiment classification and machine translation tasks as advanced Transformer models, but with significantly lower energy consumption (0.82%).

bart-Conventional neural-based NLU models are criticized for high energy consumption, making them laborious to be widely applied in low-power electronics. The core of our model is bi-directional spiking neural network (SNN) which transforms numeric values into discrete spiking signals and replaces massive multiplications with much cheaper additive operations. We examine our model on sentiment classification and machine translation tasks. Experimental results reveal that our model achieves comparable classification and translation accuracy to advanced Transformer baseline, whereas significantly reduces the required computational energy to 0.82%.