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DEEP LEARNING TECHNIQUES AND MODEL RISK EVALUATION FOR OFAC SANCTION SCREENING MODELS

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ABSTRACT

The implementation of deep learning techniques has significantly enhanced the accuracy and efficiency of OFAC (Office of Foreign Assets Control) sanction screening models, which are critical for financial institutions in ensuring compliance with regulatory standards. This paper explores the role of advanced neural networks and natural language processing (NLP) in identifying sanctioned entities, reducing false positives, and improving the overall risk management framework. By leveraging architectures such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), coupled with contextual embeddings like BERT and GPT, modern sanction screening models can interpret complex linguistic patterns and nuanced variations in data, leading to more robust detection capabilities.

However, the deployment of these models introduces challenges associated with model risk, including overfitting, bias, and explainability. To address these concerns, this research incorporates model risk evaluation frameworks that assess performance, fairness, and interpretability. Techniques such as SHAP (SHapley Additive exPlanations) and LIME (Local Interpretable Model-agnostic Explanations) are utilized to enhance transparency and foster regulatory compliance.

The findings indicate that while deep learning models offer substantial benefits in accuracy and operational efficiency, rigorous testing and validation are crucial to mitigate risks and ensure ethical use. This paper emphasizes the importance of a balanced approach, integrating technical advancements with robust governance mechanisms, to optimize the efficacy of OFAC sanction screening systems while safeguarding against potential pitfalls. The study provides actionable insights for practitioners aiming to deploy AI-driven solutions in high-stakes regulatory environments.

KEYWORDS: *OFAC Sanction Screening, Deep Learning, Model Risk Evaluation, Neural Networks, Regulatory Compliance, Natural Language Processing (NLP), BERT, GPT, Model Explainability, Fairness, SHAP, LIME, Operational Efficiency, Bias Mitigation, Governance Mechanisms*

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