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Artificial Intelligence in Life Insurance Underwriting: A Risk Assessment and Ethical Implications

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Abstract: *The underwriting of Machine learning (ML) and artificial intelligence (AI) are transforming life insurance, which enables quicker, more precise, and data-driven risk assessment procedures. In order to assess and contrast this study uses a real-life insurance dataset to examine the efficacy of three predictive modelling techniques: Classifiers such as Random Forest (RF), Stochastic Gradient Descent (SGD), and Neural Networks (NN). The neural network model achieved 100% recall, 98% accuracy, 98% precision, and a 99% F1-score, significantly outperforming the other models. Extensive data preparation methods were used, such as solving class imbalance and enhancing model robustness, outlier identification and removal, and missing value imputation. This technique is called Synthetic Minority Over-Sampling (SMOTE). The study critically analyzes ethical issues, including algorithmic openness, fairness, and data privacy, in addition to model performance, to facilitate the ethical use of artificial intelligence. With the goal of increasing operational effectiveness and promoting equity and trust in life insurance underwriting procedures, the suggested framework emphasizes the significance of both technical excellence and ethical accountability*

Keywords: Artificial Intelligence (AI), Machine Learning (ML), Life Insurance Underwriting, Risk Assessment, Neural Networks (NN), Random Forest (RF).

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