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Anti - Phishing Techniques in Cybersecurity

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Abstract: *Phishing attacks represent one of the most pervasive and damaging threats in contemporary cybersecurity, exploiting human psychology and technological vulnerabilities to compromise sensitive information. This technical report presents a comprehensive examination of anti-phishing techniques, encompassing traditional heuristic approaches, advanced machine learning methodologies, and emerging artificial intelligence-driven defence mechanisms. The study analyses the evolution of phishing threats from rudimentary email scams to sophisticated spear-phishing campaigns utilising social engineering and polymorphic attack vectors. Through systematic investigation of detection frameworks, this research evaluates rule-based filtering, natural language processing techniques, and deep learning models including support vector machines, random forests, and convolutional neural networks. Experimental results demonstrate accuracy rates exceeding 97% in URL classification tasks, whilst highlighting persistent challenges such as zero-day threats, adversarial evasion, and dataset imbalance. The report emphasises the critical importance of multi-layered protection strategies combining technological solutions with user education initiatives. By examining real-world implementations and emerging research directions including blockchain verification and federated learning approaches, this work contributes to the ongoing effort to safeguard digital ecosystems against increasingly sophisticated phishing attacks. The findings underscore that effective anti-phishing systems must integrate adaptive learning capabilities, threat intelligence feeds, and privacy-preserving architectures to address the dynamic threat landscape facing organisations and individuals worldwide.*

Keywords: Blockchain, Cybersecurity**,** Phishing attacks, Anti-phishing

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