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Machine Learning Applications in Healthcare Diagnostics: A Systematic Review

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Abstract

This paper provides a comprehensive systematic review of machine learning applications in healthcare diagnostics, covering supervised, unsupervised, and reinforcement learning methods across imaging, genomics, and clinical decision support systems. We analyzed 142 peer-reviewed studies published between 2018 and 2024, identifying key trends, limitations, and future research directions. Our findings indicate that deep learning models consistently outperform traditional statistical approaches in image-based diagnostics, while interpretability remains the principal challenge for clinical adoption.

Keywords: machine learning, healthcare, diagnostics, deep learning, clinical decision support

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