Journal of Computer Science and Information Systems,

ISSN 2535-1451

Deep Learning for Cancer Diagnosis in Medical Imaging Through Neural Network Feature Selection Optimization

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Abstract:

Accurate and early cancer detection is critical for improving patient outcomes, and medical imaging plays a central role in this process. This study proposes a deep learning-based approach for optimizing cancer diagnosis in medical imaging using neural network feature selection techniques. High-dimensional medical imaging data, such as CT scans and MRI, are first processed using advanced neural networks, including Convolutional Neural Networks (CNNs), to extract relevant features. Feature selection techniques, such as Recursive Feature Elimination (RFE) and Genetic Algorithms (GA), are applied to reduce dimensionality and enhance model performance by focusing on the most discriminative features for cancer classification. The optimized system significantly improves diagnostic accuracy, reduces computational complexity, and facilitates the development of efficient clinical decision support tools for cancer detection.

Keywords:

Deep learning, cancer diagnosis, medical imaging, neural networks, feature selection, optimization.

ISSN 2535-1451

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