

A SYSTEMATIC REVIEW PAPER ON LIVER FIBROSIS DETECTION USING MACHINE LEARNING APPROACH

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Abstract:

Liver fibrosis is a consequence of chronic liver diseases like Hepatitis, cirrhosis, Hemochromatosis, and non-alcoholic fatty liver disease (NAFLD), necessitating accurate staging for optimal patient management. Traditional diagnostic methods such as liver biopsies are informative, pose risks and invasiveness concerns. However, recent strides in machine learning (ML) offer promising alternatives for liver fibrosis detection, potentially enhancing accuracy and mitigating the need for invasive procedures. ML techniques have emerged as effective non-invasive tools for liver fibrosis detection. This overview highlights various methods, focusing on ML alongside traditional and contemporary approaches. In recent years, several ML algorithms, including Genetic Algorithm (GA), Artificial Neural Network (ANN), Naive Bayes, Multi-Linear Regression, Random Forest, Decision Tree (DT), Support Vector Machine (SVM), and Particle Swarm Optimization (PSO) have been employed to predict liver fibrosis. Research studies have evaluated the performance of these ML approaches to comparing their results with existing techniques. By leveraging the extensive capabilities of ML algorithms, researchers can construct robust predictive models, potentially revolutionizing liver disease diagnosis and management. Moreover, the integration of ML into liver fibrosis detection holds immense promise, offering non-invasive alternatives to traditional methods while enhancing accuracy and patient outcomes. This overview serves as a roadmap for researchers, guiding them towards harnessing ML potential in building secure predictive models for liver fibrosis detection.

Keywords:

Machine Learning, Supervised, Unsupervised, Liver Fibrosis, Biopsy, Hepatitis, Cirrhosis, Hemochromatosis.

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