

# **Proceedings of the National Conference on Robotics and Automation**

**23<sup>rd</sup> February 2024**

*Chief Editor*

**Dr. S. Arun Prasad**

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**Mr. J. Albert Irudayaraj**

**Dr. R. A. Vinoth Kumar**



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## **Explainable Artificial Intelligence: Deep Learning Models in Medical Image Interpretation**

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### **Abstract**

In many cases, deep learning techniques have proven to be more efficient than human experts in diagnosing medical conditions. Nonetheless, the algorithms' opaque nature has limited their application in clinical settings. Current research on explainability attempts to highlight the characteristics that most affect a model's choice. Reviews of the literature in this field have mostly concentrated on taxonomy, ethics, and the necessity of explanations. This article presents an overview of the various medical imaging tasks that explainable deep learning is currently being used for. This article discusses the different methods, difficulties in implementing them in clinical settings, and topics that still need investigation from the perspective of a deep learning researcher creating a system for clinical end users.

**Key words** :explainability;explainableAI;XAI;deeplearning;medicalimaging;diagnosis

### **1. Introduction**

Artificial intelligence (AI) in computer-aided diagnostics (CAD) offers a possible means of increasing diagnostic process efficiency and accessibility for the general public. The most effective artificial intelligence (AI) technique for a variety of tasks, including issues with medical imaging, is deep learning. It has been employed for medical imaging tasks such as the categorization of Alzheimer's disease [1], lung cancer detection [2], retinal disease detection [3, 4], liver cancer deduction [5] etc. and is the state of the art for

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