

# An AI Based Platform for Rheumatoid Arthritis Disease Using Cascade Inception Based Deep CNN Classification with Transfer Learning Inference

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## ABSTRACT

One of the severe auto immune diseases that affects the entire human body is Rheumatoid Arthritis (RA), the disease triggers one's immune system to attack the inner linings of bones and causes severe inflammation of the synovium. The continuous erosion of bone lining leads to permanent loss of the joint, accounting this severity the early prognosis of the disease is a significant and inevitable process. But the sign and symptoms of the disease are always uncertain. The symptom of RA disease is similar to other inflammatory diseases, so highly experienced experts can identify the disease in its early stage. The existing system with Convolutional Neural Network had shown shortfalls in terms of adaption and reuse of learned outcomes. To overcome this kind of problems and to support the clinicians and technicians for early prognosis of the disease, a computer-aided decision support model based on Harmony Search is proposed. In this research, we are using CNN with pre-trained deep models with transfer learning to fill this gap. We proposed a framework for Rheumatoid Arthritis Disease Prediction using CNN equipped with AlexNet and GoogLeNet cascade inception. Keras and TensorFlow along with Python data science platform are used for implementation of the proposed framework. The proposed framework is compared with existing deep learning models such as AlexNet, GoogLeNet. These patient datasets are used for empirical study. The experimental results may reveal that the proposed algorithm will outperform the state-of-the-art deep learning models for automated prediction of Rheumatoid Arthritis diseases.

**Keywords:** Rheumatoid Arthritis; CNN

## How to Cite

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