(12) PATENT APPLICATION PUBLICATION   (21) Application No.202411074088 A

(19) INDIA

(22) Date of filing of Application :30/09/2024   (43) Publication Date : 11/10/2024

(54) Title of the invention : ENHANCED DIABETIC RETINOPATHY DETECTION SYSTEM WITH INTEGRATED TRANSFER LEARNING AND NATURE-INSPIRED OPTIMIZATION

(51) International classification	:G06N0003080000, G06N0003006000, A61B0003140000, A61B0003120000, A61B0005000000	(71)Name of Applicant :
(86) International Application No Filing Date	:NA :NA	1)Chitkara University Address of Applicant :Chitkara University, Chandigarh-Patiala National Highway, Village Jhansla, Rajpura, Punjab - 140401, India Rajpura ----------- -----------
(87) International Publication No	: NA	2)Chitkara Innovation Incubator Foundation Name of Applicant : NA Address of Applicant : NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA	(72)Name of Inventor : 1)Dr. Raj Gaurang Tiwari Address of Applicant :Chitkara University Institute of Engineering and Technology, Chitkara University, Chandigarh-Patiala National Highway, Rajpura, Punjab (140401) Rajpura ----------- -----------
(62) Divisional to Application Number Filing Date	:NA :NA	

(57) Abstract :
ABSTRACT The present disclosure introduces an enhanced diabetic retinopathy detection system with integrated transfer learning and nature-inspired optimization 100 that integrates transfer learning and nature-inspired optimization techniques to improve diagnostic accuracy. The system incorporates data acquisition unit 102 to capture high-resolution retinal images using a smartphone-based fundus camera. The feature extraction unit 104 utilizes a pre-trained SqueezeNet model to extract high-level features from these images. These features are then refined using the feature optimization unit 106, which applies Particle Swarm Optimization (PSO) and Crow Search Algorithm (CSA) to enhance feature relevance. The optimized features are fused by the feature fusion unit 108 into a refined vector, which is classified by the classification unit 110 using a Multi-Layer Perceptron model. Finally, the diagnosis reporting module 112 generates a comprehensive diagnostic report based on the classification results. Reference Fig 1

No. of Pages : 24 No. of Claims : 10