Patent Search

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Inventor

Name	Address	Country
Dr.Battula Tirumala Krishna	Professor, Department of ECE, Jawaharlal Nehru Technological University-Kakinada (JNTUK), Kakinada, East Godavari District, Andhra Pradesh, India. Pin Code:533003	India
Ms.Supriya Dubey	Assistant Professor, Department of CSE, SRM Institute of Science and Technology, Ghaziabad, Uttar Pradesh, India. Pin Code:201204	India
Mrs.R.Shoba	Assistant Professor, Department of Information Technology, St. Joseph's College of Engineering, OMR, Kamaraj Nagar, Semmancheri, Chennai, Tamil Nadu, India. Pin Code:600119	India
Dr.R.Selvi	Associate Professor, Department of Computer Science & Engineering, SMK Fomra Institute of Technology, Kelambakkam, Chennai, Tamil Nadu, India. Pin Code:603103	India
Mr.P.Sathish Kumar	Assistant Professor, Department of IT, Misrimal Navajee Munoth Jain Engineering College (MNMJEC), Chennai, Tamil Nadu, India. Pin Code:600097	India
Ms.S.Jayachitra	Assistant Professor, Department of ECE, PSNA College of Engineering and Technology, Tamil Nadu, India. Pin Code:624622	India
Mrs.C.Selvarathi	Assistant Professor, Department of Computer Science and Engineering, M.Kumarasamy College of Engineering, Karur, Tamil Nadu, India. Pin Code:639113	India
Dr.D.Gouse Peera	Assistant Professor, Department of Civil Engineering, Annamacharya Institute of Technology and Sciences, Rajampet, Andhra Pradesh, India. Pin Code:516126	India
Mr.Addagatla Prashanth	Assistant Professor, Institute of Aeronautical Engineering, Dundigal, Hyderabad, Telangana, India. Pin Code:500043	India
Mr.A.Venugopal Rao	Assistant Professor, Department of CSE, Sphoorthy Engineering College, Nadergul, Hyderabad, Telangana, India. Pin Code:501510	India

Applicant

Name	Address	Country
Dr.Battula Tirumala Krishna	Professor, Department of ECE, Jawaharlal Nehru Technological University-Kakinada (JNTUK), Kakinada, East Godavari District, Andhra Pradesh, India. Pin Code:533003	India
Ms.Supriya Dubey	Assistant Professor, Department of CSE, SRM Institute of Science and Technology, Ghaziabad, Uttar Pradesh, India. Pin Code:201204	India
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Abstract:

The present invention relates to a system and method for detecting cardiovascular pathology of a patient using an artificial intelligence (AI) based approach through a retinal scans. The system comprises a retinal imaging device that captures high-quality images of the patient's retina. The retinal images are then pre-processed to en quality and standardize their features. The pre-processed images are then analysed by a machine learning model that has been trained on a large dataset of retinal im labelled as normal or abnormal. The model extracts specific features from the images that are indicative of cardiovascular pathology. The system uses a deep neural image analysis, which has the capability to learn and extract complex features from the images. The system further includes a user interface that displays the analyse images and the model's prediction of the patient's cardiovascular pathology.

Complete Specification

Description:[001] The present invention relates to the field of cardiovascular pathology. The invention more particularly relates to an artificial intelligence (AI) based detection of cardiovascular pathology of a patient through retinal scan.

BACKGROUND OF THE INVENTION

[002] The following description provides the information that may be useful in understanding the present invention. It is not an admission that any of the inform provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[003] Cardiovascular diseases (CVDs) are a leading cause of death worldwide, accounting for over 17 million deaths annually. Early detection and diagnosis of CV greatly improve patient outcomes and reduce mortality rates. One potential approach for early detection of CVDs is through the analysis of retinal images.

[004] Retinal images provide a non-invasive means of visualizing the blood vessels in the eye, which are directly connected to the cardiovascular system. Change structure or function of these blood vessels can be indicative of underlying cardiovascular pathology. In recent years, researchers have used artificial intelligence (AI techniques to analyse retinal images and identify features that are associated with CVDs.

[005] AI-based detection of cardiovascular pathology through retinal scans typically involves training machine learning models on large datasets of retinal image have been labelled as either normal or abnormal. These models are then used to automatically analyse new retinal images and provide a prediction of whether the has CVD or not. Some studies have reported high accuracy rates for this approach, with sensitivities of up to 97% and specificities of up to 94%. If successful, AI-base detection of cardiovascular pathology through retinal scans could provide a fast, non-invasive, and cost-effective screening tool for early detection of CVDs. This cou particularly useful in resource-limited settings where access to more advanced cardiovascular diagnostic tools is limited. However, more research is needed to valid

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