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Patent Search

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Inventor

Name	Address	Country
Dr. Raghavaraju Aradhyula	Associate Professor, Department of ECE, Guntur Engineering College, Guntur, Andhra Pradesh, India, Pincode: 522019	India
Mrs. G. Sridevi	Assistant Professor, Mechanical Engineering Department, Centurion University of Technology and Management, Odisha, India, Pincode: 761211	India
Mr. Arpan Singh Rajput	Research Scholar, Department of Electronics and Communication, Jabalpur Engineering College, Jabalpur, Madhya Pradesh, India, Pincode: 482004	India
Dr. N. Angayarkanni	Professor, Department of Electronics and Communication Engineering, Paavai Engineering College (Autonomous), Pachal, Namakkal, Tamilnadu, India, Pincode: 637018	India
Mrs. Bhavani Thota	Assistant Professor, Department of ECE, KKR KSR Institute of Science & Technology, Guntur, Andhra Pradesh, India, Pincode: 522007	India
Mrs. Shirin Shafi Pinjari	Lecturer, Department of Computer Engineering, GF's Godavari College of Engineering, Jalgaon, Maharashtra, India, Pincode: 425001	India
Mr. P. Shiva Kumar	Assistant Professor, Department of Electrical and Electronics Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India, Pincode: 500043	India
Dr. Nellore Manoj Kumar	Independent Researcher, Infinite-Research, Founder and CEO, B.O. 15-225, Gollapalem, Venkatagiri, Tirupati District, Andhra Pradesh, India, Pincode: 524132	India

Applicant

Name	Address	Country
Dr. Raghavaraju Aradhyula	Associate Professor, Department of ECE, Guntur Engineering College, Guntur, Andhra Pradesh, India, Pincode: 522019	India
Mrs. G. Sridevi	Assistant Professor, Mechanical Engineering Department, Centurion University of Technology and Management, Odisha, India, Pincode: 761211	India
Mr. Arpan Singh Rajput	Research Scholar, Department of Electronics and Communication, Jabalpur Engineering College, Jabalpur, Madhya Pradesh, India, Pincode: 482004	India
Dr. N. Angayarkanni	Professor, Department of Electronics and Communication Engineering, Paavai Engineering College (Autonomous), Pachal, Namakkal, Tamilnadu, India, Pincode: 637018	India
Mrs. Bhavani Thota	Assistant Professor, Department of ECE, KKR KSR Institute of Science & Technology, Guntur, Andhra Pradesh, India, Pincode: 522007	India
Mrs. Shirin Shafi Pinjari	Lecturer, Department of Computer Engineering, GF's Godavari College of Engineering, Jalgaon, Maharashtra, India, Pincode: 425001	India
Mr. P. Shiva Kumar	Assistant Professor, Department of Electrical and Electronics Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India, Pincode: 500043	India
Dr. Nellore Manoj Kumar	Independent Researcher, Infinite-Research, Founder and CEO, B.O. 15-225, Gollapalem, Venkatagiri, Tirupati District, Andhra Pradesh, India, Pincode: 524132	India

Abstract:

The proposed invention is a Deep Learning-based Image Processing System designed to enhance the quality of microscopic images. Microscopy is widely used in scie research and medical diagnostics, but microscopic images often suffer from limitations such as low resolution, noise, and poor contrast. The system leverages the po learning algorithms to extract meaningful features and patterns from the images, improving resolution, reducing noise, enhancing contrast, and highlighting fine deta system consists of pre-processing, deep learning model training, image enhancement, and post-processing stages. By utilizing deep learning, the system can adapt to complexities of microscopic images and handle various microscopy techniques. The invention offers advantages over traditional methods by automating the image e process, reducing manual effort, and increasing accessibility to advanced microscopy techniques. The proposed system has broad applications in scientific research, diagnostics, and industrial sectors, promoting advancements and benefiting various fields reliant on microscopic imaging.

Complete Specification

Description:The proposed invention pertains to the field of image processing, specifically focusing on the enhancement of microscopic images using deep learning techniques. Microscopy is an essential tool in various scientific and medical disciplines, allowing researchers and practitioners to observe and analyze objects at a microscopic level. However, microscopic images often suffer from inherent limitations, such as low resolution, noise, and poor contrast, which can hinder accurate interpretation and analysis.

Background of the invention:

Microscopy plays a crucial role in scientific research, medical diagnosis, and various other fields where the observation and analysis of objects at a microscopic level essential. Microscopic images provide valuable insights into the structure, composition, and behavior of biological specimens, nanoparticles, and other minute obje However, these images often suffer from inherent limitations, such as low resolution, noise, and poor contrast, which can impede accurate interpretation and analy Traditionally, image processing techniques have been employed to enhance the quality of microscopic images. These techniques include methods for noise reducti contrast enhancement, image registration, and sharpening. However, these traditional approaches have their limitations, as they often rely on handcrafted features assumptions that may not adequately capture the complex variations and structures present in microscopic images.

In recent years, deep learning has emerged as a powerful tool for image processing and computer vision tasks. Deep learning algorithms, particularly convolutional networks (CNNs), have shown remarkable success in various domains, including image recognition, object detection, and semantic segmentation. These algorithms automatically learning hierarchical representations of data, allowing them to capture complex patterns and features without the need for explicit feature engineerin Inspired by the success of deep learning in other image processing domains, there is a growing interest in applying these techniques to enhance microscopic image

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