Adaptive Medical Image Recognition System with Limited Data Transfer Learning

Medical image analysis is hindered by models built from limited data

Medical image analysis often requires domain-specific models and developing these models from scratch is hindered by limited data. The proposed system addresses this challenge by employing transfer learning with limited data, enabling it to adapt to new clinical applications. By utilizing annotated sample images, the system transforms generic models into application-specific ones and overcomes the limitations of traditional systems that are often tailored to specific domains or imaging devices.

Innovation works around limited data sources by using transfer learning

This invention is an adaptive medical image recognition system that utilizes transfer learning with limited data to recognize, localize, and classify regular and abnormal structures in medical images. It allows easy adaptation to new clinical applications by leveraging sample images with annotations as well as transforming generic models into specific classification and localization models for the target application.

Summary Bullets

- Adaptive medical image recognition system that utilizes transfer learning to overcome limitations caused by minimal amounts of data.
- Novel innovation transforms generic models into application-specific ones and overcomes the limitations of traditional systems that are often tailored to specific domains or imaging devices.
- New image recognition system can be used for diagnostics and analysis as well as medical condition monitoring.

Solution Advantages

- **Limited Data Requirement:** Overcomes the challenge of limited data by utilizing transfer learning, making it practical for a broader range of medical applications.

- **Adaptability:** The system can be easily customized for different medical domains and imaging devices, allowing for widespread applicability.

- **Efficient Model Transformation:** The technology efficiently transforms generic models into application-specific ones, reducing the time and resources required for model development.

Potential Commercial Applications

- **Diagnostics:** Facilitates accurate and efficient medical image analysis, aiding in the diagnosis of various conditions across different medical domains.

- **Medical Condition Monitoring:** Enables continuous monitoring of medical conditions, allowing for timely intervention and personalized patient care.

Inventors

- Dr. Ghassan AlRegib
  Professor – Georgia Tech School of Electrical and Computer Engineering

IP Status

The following patent application has published and additional international coverage is pending : US2022/0222817

Publications

Relative Afferent Pupillary Defect Screening Through Transfer Learning, IEEE Journal of Biomedical and Health Informatics - 2022

Images

Visit the Technology here:
Adaptive Medical Image Recognition System with Limited Data Transfer Learning

---