

A Review on Online Databases for Medical Images with Applications

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Abstract: Medical images are very useful for the human being's, especially when some diseases are to be identified for medical purposes. Medical images are used to diagnose or examine disease on time. It is the part of biological imaging and incorporates radiology. On the basis of measurement techniques and recording techniques medical images are of various types e.g. electroencephalography, magnetoencephalography (MEG), Electrocardiography (EKG) etc. Medical image analysis is done to ensure database consistency and reliable image processing. In this paper various databases of medical images available globally are reviewed. This work will help to the researchers to identify the databases for their research in the area of medical image processing.

Keyword: Database, open access, Diagnosis Medical Images.

1. INTRODUCTION

Medical Images which are used to diagnosis several diseases, are digital in nature. A two dimensional image is combination of rectangular blocks, these rectangular boxes are also known as pixels. Where 3-D image is combination of volume blocks called voxels (volume elements). Both types of images are represented by a set of coordinates in space, with all set of coordinates having a specific value that represents the greylevel intensity of the image. Medical images are normally 2-D in natures so, our focus are on pixels and pixel level analysis. Texture may be defined according to the of grey- level values distribution of the pixels related with the region of interest in the image.

There are various modalities available each having different technology to capture images and used for specific purpose from the basic understandability to critical study of the organs and tissues of human body which helps doctors to diagnose the disease and treat them with properly on time. Various Data bases are available for the analysis of medical images, some of them are discussed in section II.

2. MEDICAL DATABASES

Some of the major medical databases available around the globe are listed below with important details:

A. ARRS Gold Miner

ARRS Gold Miner was initially intended for students and medical professionals, but it is available for everyone for free. It helps user to find articles and images from peer

reviewed biomedical journals. It doesn't require user's personal information. Database is updated least a month from peer reviewed biomedical journals. The key feature of AARS Gold Miner is that it understand medical vocabulary, their abbreviations and synonyms unlike many other search engines. It gives access to 529,740 biomedical images published in 836 selected peer-reviewed journals. Search can be filtered by findings, anatomy, imaging technique, and patient age and sex.

B. Yottalook

Yottalook is a no cost medical imaging search engine. It was originally developed by four radiologists: Woojin Kim MD, Khan M. Siddiqui MD, William Boonn MD and Nabile Safdar MD. Algorithms by Montage Healthcare, Inc. and Solutions gives ranking and proprietary relevance. It is designed for patient care for the practicing radiologists in time of need. It provides access over 8,00,000 images related to radiology.

Core technologies of Yottalook are (a) Natural Query Analysis (b) Semantic Ontology (c) Relevance Algorithm. All of them are developed by the Montage Healthcare Solutions.

C. Midas

The Midas platform is an open-source toolkit. It stores web-enabled data storage. It provides intelligent, flexible data storage system integrated with multimedia server technology with data analysis and visualization. It is used for data archiving, analysis and access. It host public and

private collection of data, handles massive collection of images and other files. It manages images, non-images file and meta data and support more than 20 types of imaging data format.

D. Oasis

The Open Access Series of Imaging Studies (OASIS) project is developed by Dr. Randy Buckner at the Howard Hughes Medical Institute (HHMI) at Harvard University to make MRI data sets of the brain available to all at no cost with the aim to assist in new discoveries in neuroscience. The website is developed by XNAT. It gives tool for managing function between server and client for neuro-imaging venture.

OASIS has two databases:

- 1: OASIS: Cross-sectional MRI Data in Young, Middle Aged, Nondemented and Demented Older Adults:

Table 1. OASIS Database

OASIS	Cross-sectional
No. of subjects	416
Age	18-96
Gender	M & F
Working Hand	All Right-handed

- 2: OASIS: Longitudinal MRI Data in Nondemented and Demented Older Adults:

Table 2. MRI Database

OASIS	Longitudinal
No. of subjects	150
Age	60-96
Gender	M & F
Working Hand	All Right-handed

E. TCIA

The Cancer Imaging Archive (TCIA) is easy to use service used to identifies, de-identifies and gather huge archive of medical images of cancer for scientific community over the world for free. The data is collected of patients of disease such as skin cancer, image modality. Supporting data related to the images such as patient outcomes, treatment details, genomics, pathology, and expert analyses are also provided when available. The images available at TCIA can be used by Cancer researchers, Engineers and developers,

Professors and general public too. Functions like Searching for images, reviewing the results, downloading the data, referencing the data are available for users. TCIA is a project funded by the Cancer Imaging Program of the National Cancer Institute.

F. Open-i

This database is provided by National Library of Medicine, USA. This is provided for the research purpose any one can retrieve images from this open source database. It has huge collections of biomedical images. Images can be retrieve with the help of text queries and also with a query image.

Sources of Open-i are following:-

- 1: The Open Access Subset of PubMed Central (PMC).
- 2: The Indiana University hospital network.
- 3: The Orthopedic Surgical Anatomy Teaching Collection o Images from the History of Medicine Division o MedPix

Table 3. Open-I Database

Images	3.7 million
Articles	1.2 million
X-rays	7,470
Radiology report	3,955
NLM images	67,517
Oethopedic	2,064

G. Adjumed

ADJUMED is Swiss open source database. Initially founded in 1995 by Christoph Rageth with the aim to give other hospitals with his program ADJUMED. Later replaced by an online service and expanded towards quality assurance. They provide tools for medical catalog as online service.

The three pillars of adjumed system are:

- 1: AdjumedCollect
- 2: AdjumedAnalyze
- 3: PublicDatabase

H. USC-SIPI

The USC Viterbi, Signal and Image Processing Institute (SIPI) Image database is collection of digitized images. USC-SIPI image database first published in 1977 since then lots of new images has been added. The aim to create database is to support researchers in image processing and analysis.

3. CONCLUSION

In This paper a detailed review has been presented on online databases of medical images, database is very important for the effective processing of medical images in the field of medical imaging. If the data base is not taken appropriately the efficient results will be not identified and also these results will not be considered for the future research.

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