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A Review on Different Techniques of Image Processing in Healthcare Sector

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Abstract – This topic deals with multiple categories of techniques regarding image processing used in the field of health sector. Advancements of image processing in addition with visioning of computer in this sector have been explored, but not upto the mark. So, healthcare industry are striving to use innovative medical procedures and treatment practices coupled with technologies, though sensor – based activity is also very important term[1, 2]. Integration of various methods and technologies can bring changes in vision-based analysis. The digitital technology of present time has enabled to penetrate alterations in several dimensional signals with respect to range which is within simplified circuits in digital form to complex and advanced computers in parallel. This exclusive term accepted high-quality research papers and many related articles which accept both the challenges and applications of image processed and vision in healthcare, for the enhancement of human life.

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INTRODUCTION

It is believed and proved that images bear the greatest density of natural information on all ways and opens the door for human communication. In the similar approach the pictures in biomedical field do not bear any exclusion to this proclamation, at time of handling the morphological data. With the help of this you can perform various programs image analysis, segmentation, image enhancement, noise reduction geometric transformations, and image registration. For example, in order to develop smart homes for elderly people grasp various activities based on image or video or sensor are crucial. Though we concentrated mainly on video-based analysis for a digital camera or similar image sensors, normal and abnormal daily activity understandings/recognition [4] based on other sensors are widely explored in the last several years. This special term was approachable in other related areas too, for example, related database, special system or instrumentations related to healthcare, nurse robot, big data, passive technologies, and applications.

VARIOUS APPROACHES

We have received thirty-two manuscripts for this term under the supervision of various advancements of imaging and vision in healthcare. This deal in other sectors like brain detection, prediction in hypertension no diabetic patients, patient have problem in joints, improvement in decovolution model of MTF, knee arthoplasty, radiomics for occurrence of cerebral aneurysm in MR angiography images, OCT segmentation of retinal based image, in addition with recognition of motions of knee joint, analysis of human brain shape, classification of microscopic colonic images,3D macrophage tracking deep neural network based medical image compression , reconstruction quality in digital breast cancer ,phase-contrast X-ray imaging, medical image restoration ,brain tumour growth investigation, eye pointer interaction device , brain abnormality detection, quality index of mrdical images, brain MRI segmentation, observation of bulged disk cervical vertebral detection of blue-white structure images and so on.

Y.Huang incorporated the motions based on intracellular aspects on model of adaptive complete variation. He made advancement in the histograms of oriented optical flow (HOOF)[5] later by the means of flow of optical in the motion of intracellular was calibrated. Further, the gaps comprising the several HOOFs were calibrated as characteristics of the motion involved. These are thoroughly investigated under the “Quantiative Analysis of Intracellular Based on Optical Flow Model.”

S. Han et al proposed a deconvolution based model in the direction of Modulation Transfer Function (MTF) so as to have betterment in CT to get the best resolution. He made eleven assumptions that were capable of declining the noise as well as uplift spatial resolution. By discharging estimated Distorting Point Spread Function (PSF) Kemel, they introduced the work as “A subband – Specific DE convolution Model

Improvement in CT". It can work well even i the soft tissue region.

The note by V.Kelkar et al. shows many histogram shift methods to explore the hiding capacity for telemedicine implementation. In their reversible watermaking method for medical images, they receive high peak signal-to-noise ratio(PSNR). The higher the PSNR value, the better the revertable of the watermaking. They showed better function tan classical histogram shifting-based algorithms[6]for this purpose.

Y-M Chen and S-G Miaou came up with an exclusive ideology behind detection of non- invasive anemia within their investigation referred as "A Filtering of Kalman as well as Non- linear Regreesion based penalty Approach regarding the identification of Noninvasive anemia with respect to pictures of Palpebral Conjunctiva". In their anemia investing method, they include a modified Kalmanfilter [7]along with a regression method a penalty function. Their performance were compared with other same model.

V .Roy et al. Introduced a technology to eliminate the artifacts motion from EEG . In the study "Gaussian Elimination-Based Novel Canonical Correlation Analysis they used more innovative model from EEG TO GECCA which is known as "Gaussian Canonical Correlation. They want best terminology to delete EEG motion arifacts similar to CCA.

The note by L.Fassina et al. Introduced the new and kinematics hitting cardiac syncytica and read the inotrpoic effects model of electromagnetic simulation and so on. In their work "Model of Murine Ventricular Cardiac Tissue they develop a new model "Murine Ventricular Cardiac Tissue" to read and work on many other related issues like, the contraction movement

We can read a new or some interesting reference on this special case like, Augmented Reality(AR) which bring some interesting and important facts based on vision based applications, including medical surgery. The note written by P.Vavra et al. Showed the real facts of the augmented reality in surgical procedures under the title "Recent Development of Augmented Reality in Surgery".

The articles published by PubMed and SCOPUS introduced an interesting and innovative ideas and indepth knowledge on AR Surgery. They found and enclose some important facts about AR Surgery from several hundred research papers to show some best examples on AR Surgery. Many approaches and implementing areas and future challenges are also introduced by this work.

Some other reviews are also published by R. Richert et.al. In his note "Intraoral Scanner Technologies he gave his opinion on dental and clinical applications. He put his focus on current terminology on IOS and their related clinical implementation and consequences. At last he introduced some important facts, which were accurate and exact about IOS technologies, brief knowledge and truth of IOS files ,for relaxation to patients, and the intermaxillary relationship to function prosthetic rehabilitation for patients.

A global and full review given by M .Machoy et al. on the applications of Optical Coherence Tomography (OCT) on dental diagnostic. At the starting level, the various types of OCT and various implementations were performed and introduced. But this survey, show that OCT can be used in the area of dentistry. It can be used in many applications. In last five years its functions are illustrated by many tables like, OCT in cardiology and restorative dentistry, in endodontic, in prosthetics, in diagnostic of oral tissues and implant logy, in orthodontics. They can be used for research work also.

CONCLUSION

In this note, we focus our opinion on special issue on the improved technologies of image processing and computer vision for healthcare. These notes are selected from various articles and books from 32 submissions, reviews are given from best selective and meticulous process. The work and more interesting and best work will be always be given to the community and more research work will be done in future for good healthcare of the society.

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