JOURNAL OF SCIENTIFIC RESEARCH IN ALLIED SCIENCES
ISSN NO. 2455-5800
Contents available at: www.jusres.com

DETERMINATION OF APPLICATION OF CANCER DETECTING PROCESSOR FOR RURAL AREAS USING IMAGE PROCESSING CONCEPT

[1]Dr Sudhir Kumar Meesala, [2]Sonia Wadhwa*
[1]Assistant Professor, Department of CSE, Chouksey Enginnering College, Bilaspur (CG), India
[2]M.Tech. Research Scholar, Department of CSE, Chouksey Engineering College, Bilaspur (CG), India

ARTICLE INFO **ABSTRACT** **ORIGINAL RESEARCH ARTICLE**

Article History
Received: July 2019
Accepted: August 2019
Keywords: Tensorflow, Urban Areas Diagnosis, Rural Area Diagnosis, Cancer Detector Processor.

Corresponding author
Sonia Wadhwa*

Cancer detecting processor was synthesized by an image processing method with tensor flow open-source software. Microscopic images of blood samples were characterized by image processing technique; tensor flows open source software and training process of image sample. Our previous paper "an artificial system for prognosis cancer cells through blood cells images" is based on the analysis of blood cell images. The image processing method revealed that it was an old methodology in medical science. The method used for diagnosis of abnormal growth of cells in anybody using blood cell image sample. It is found that in urban areas, people can go through a diagnosis of cancer easily they have some knowledge about medical science but in rural areas, people are lack of knowledge about the diagnosis as well as they are not financially capable of it. This paper reveals how this cancer detection processor is helpful for rural areas. This procedure involves artificial expert system techniques, like machine learning, artificial neural network, with imaging techniques. Calculations say that this processor is a prototype and it contains sensitivity of 80%. The specificity of 91.04% and accuracy of 96.4%. On the basis of the above result, the detector responds that whether the blood sample contains cancer cell or it is normal blood cell. For this detection, we have already described the stepwise algorithm and flow chart to understand the methodology of this system. This paper tells how this system is helpful in today's scenario.

2019, www.jusres.com

INTRODUCTION

Today's situation deals with a truth that cannot be ignored that according to National Cancer Registry Programme of the India Council of Medical Research, more than 1300 Indians die daily due to cancer and this rate is constantly growing every year. Cancer cells are produced when the genes liable for regulating cell division are injured. Carcinogenesis is caused by transformation and epimutation of the genetic material of normal cells, which upsets the usual balance between propagation and cell death. This results in unrestrained cell division and the evolution of those cells by usual choice in the body. The unrestrained and often speedy proliferation of cells can lead to benign or

Download the article from www.medrech.com

malignant tumors (cancer). Benign tumors do not extend to other parts of the body or attack other tissues. Malignant tumors can attack other organs, spread to distant locations (metastasis) and become life-threatening. More than one mutation is required for carcinogenesis. In fact, a sequence of a number of mutations to certain classes of genes is generally necessary before a normal cell will convert into a cancer cell. Damage to DNA can be caused by contact to radiation, chemicals, and other ecological sources, but mutations also build up naturally over time through uncorrected errors in DNA transcription, making age an additional risk factor. Oncoviruses can cause certain types of cancer, and genetics are also known to play a role. Stem cell research suggests that excess SP2 protein could turn stem cells into cancer cells. However, a lack of particular co-stimulated molecules that help in the way antigens react with lymphocytes can damage the natural killer cells' function, ultimately leading to cancer. The cost of each mesothelioma treatment depends on the patient's individual treatment plan, the health care providers they desire, and their insurance coverage. For most patients, health insurance covers most of the expenses of cancer treatment but still leaves major bills for patients to spend of pocket. The previous paper "an artificial system for prognosis cancer cells through blood cells images" comes up with the process of this cancer detection system with the help of the flow chart. A new direction from WHO, launched ahead of World Cancer Day (4 February), aims to advance the chances of survival for people alive with cancer by ensuring that health services can focus on diagnosing and treating the disease prior. New WHO figures released this week points out that each year 8.8 million people pass away from cancer, mostly in low- and middle-income countries. One trouble is that many cancer cases are diagnosed very late. Even in countries with the finest health systems and services, many cancer cases are diagnosed at an advanced stage, when they are harder to treat effectively."By taking the steps to utilization WHO's new guidance, healthcare planners can amend early identification of cancer and assure prompt treatment, particularly for breast and cervical cancers. This will provide output as more people extanting cancer. It will also be less costly to treat and cure cancer patients."All countries can take steps for better early identification of cancer, in accordant to WHO's new Escort to cancer primal diagnosis.

State of affairs is distinctly greater in low- and middle-income countries, which have lower cognition to render access to effectual diagnostic services, consider imaging, laboratory tests, and pathology – all key to portion detect cancers and plan handling. Countries also presently have various capacities to refer cancer patients to the grade-appropriate level of care. WHO boost these countries to prioritize basic, high-impact and low-cost cancer diagnosis and handling services. The Organization also praise reduce the necessity for people to pay for care out of their own sack, which forbids many from attempting help in the first place. Detecting cancer primal also greatly reduces cancer's financial consequence: not only is the price of careless in cancer's early level, but people can also go on to work and influence their families if they can approach impelling treatment in time. In 2010, the total yearly economic cost of cancer through with healthcare expenditure and loss of productiveness was an approximation at US$ 1.16 trillion. Schemes to meliorate primal identification can be promptly built into the health system of rules at a devalued cost. In turn, trenchant early diagnosis can help observe cancer in patients at an in the beginning stage, enabling handling that is generally more impelling, less convoluted, and less expensive. For example, a survey in the high-income territorial division has shown that treatment for cancer patients who have been examining primordially are 2 to 4 times less high-priced compared to treating people examined with cancer at more progressive stages. All the strategies are available in urban areas.

Download the article from www.medrech.com

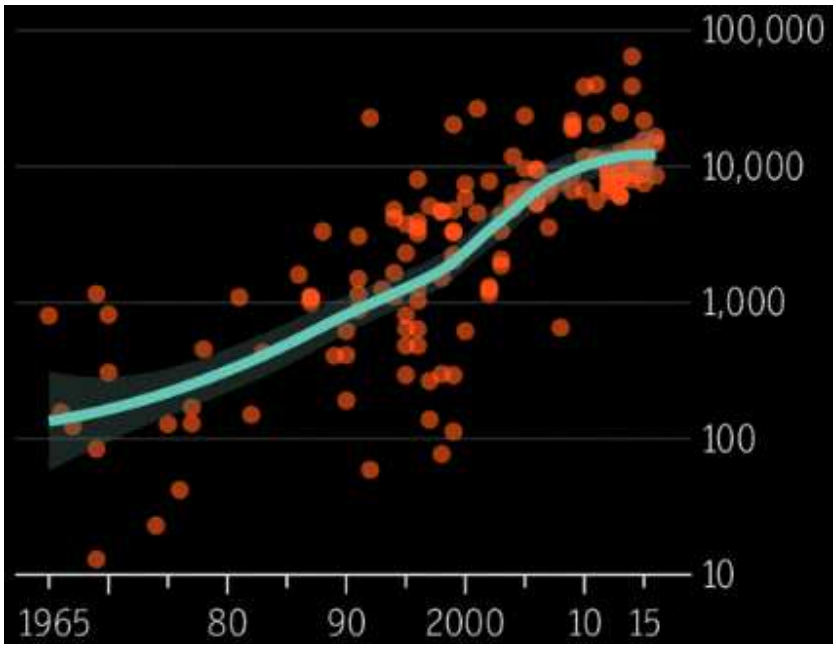


Figure 1. The United States, the median monthly cost of cancer drugs

PROBLEM STATEMENT

The basic object of the proposed work on "Determination of application of cancer-detecting processor for rural areas using image processing concept" can be summarized as follows

To analyze cancer cell using digital pictures of blood cells with the help of image processing technique using TensorFlow, as it helps in detecting the object easily. With this, it includes python language for machine learning, we could use java but in java there comes a problem of transferring or sharing data. That means if we have created this software in java than the major issue is of deportation of software form one system to another. As java is known for "Write Once Run Anywhere" but it will work in the same version of java. In the proposed method pattern will be recognized in a particular area of the image which is inserted to our software using a web camera. One more crucial stage comes, in the making of this software, if a new blood sample image will be there that time programmer can train the software on the spot. This paper will enlighten us how this diagnosis procedure is supportive for the middle-class person that he can offer it. The process is easy to apply. Dealing with cancer patients has come a long way in the past 50 years. Surgery is more precise and less injurious; with early recognition, it can even cure some cancers counting certain breast and colon cancers. Radiation therapy can be adapted to a patient's tumor type, size and location, and can treat several early-stage cancers. And many patients now obtain a precise combination of surgery and radiation, along with chemotherapy or other treatments, to enhance survival. But when it comes to eliminating cancer as a deadly disease, much of the hope and financial support lies in cancer drug invention, the speed of which has been accelerating quickly over time.

Numerous drug treatments are at a variety of stages of improvement today. Some merge old therapies for new uses; others are totally new types of drugs. Because we couldn't probably list a majority of the treatments on the sphere, we've selected just a few that shows exciting assure to extend lives and maybe even heal disease. In fact, if we see the present situation, we can get to the conclusion that in rural areas, people are so anxious about diagnosing cancer as they think it's high-priced. To beat this situation, we planted this prototype software for a rural generation.

Download the article from www.medrech.com

METHODOLOGY

This section presents the method of developing a system which is used to diagnose cancer cell and also helps in reducing the diagnosis cost so the middle-class person can afford it easily.

In image processing concept which is already defined in our previous paper, we use tensor flow as it is helpful in distinguishing the object. The software work as it simply takes an image as an input for the system, this input image is actually a blood cell image of the patient. The microscopic image will cost much less than a simple diagnoses. The cost of the blood test will not be more than rs 500/-, in fact, in government hospital, it is free for villagers having a ration card or smart card. With this, the microscopic image will cost them rs 50/-. This proves that how this technique will be less expensive that present the diagnosis process. This will work as take input then process it, if it detects the same pattern in the sample image then it shows output as cancer cells and vice-versa.

WORKING PRINCIPLE: Under this chapter, we will discuss the working principle of the software. It also tells us how this software is cheaper according to the present scenario. After the formation of agglutination, the dynamic images captured and allowed to process in image processing toolbox. This proposed plan will work in the following manner:

Step to reach the goal:

Step 1: The person has to go to the laboratory for microscopic blood sample images.

Step 2: This microscopic image is now passed through software, then this software will check pattern.

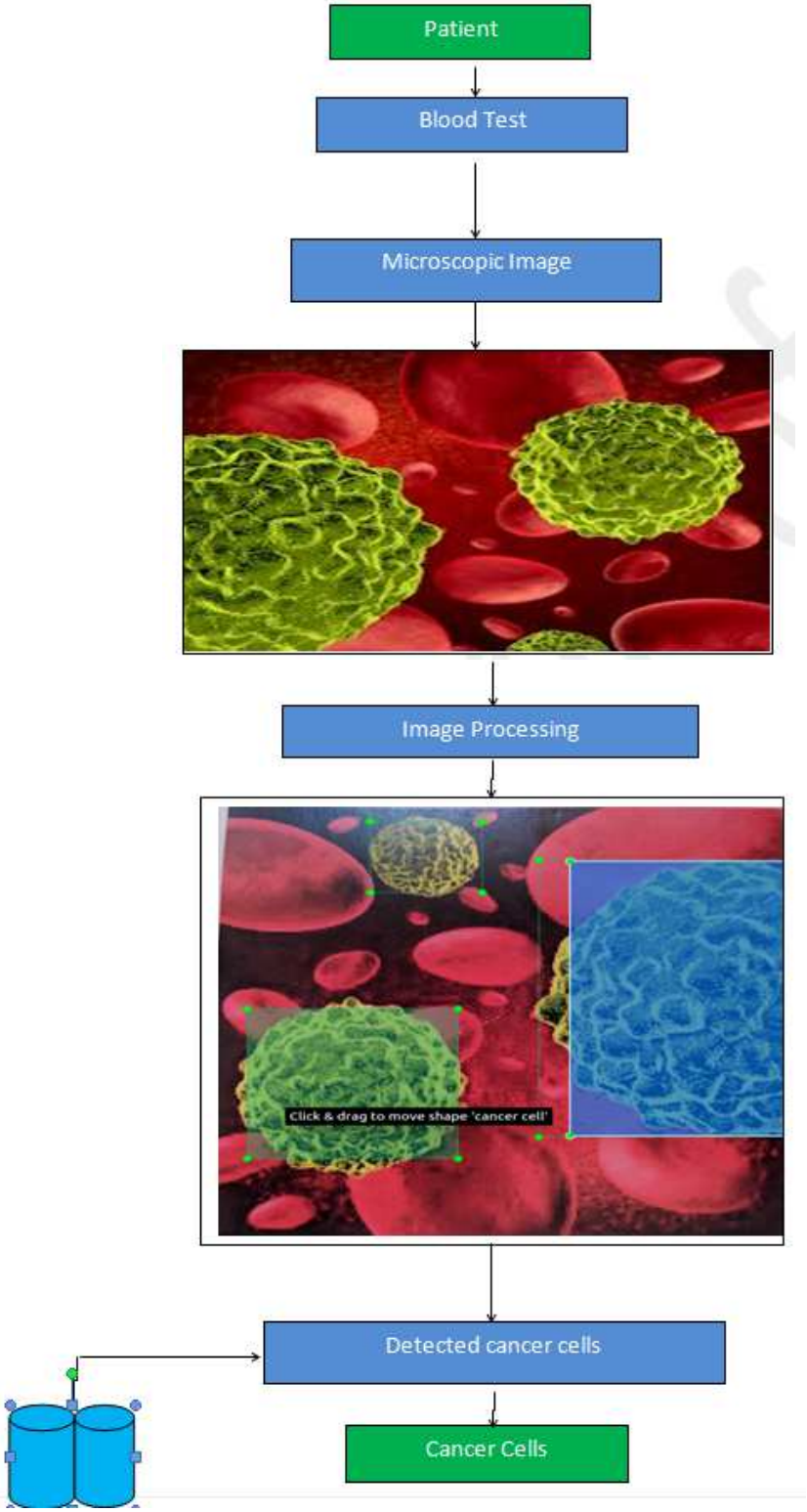
Step 3: If the pattern matches with the stored database that means matches with the sample which is trained.

Step 4: Then it displays the output as cancer cells, otherwise the output will not be detected.

If we work further on this project it can also help in detecting the stage as well as providing the precautions and also recommend doctors.

This process will be described as the flow chart below:

Download the article from www.medrech.com



Download the article from www.medrech.com

RESULT AND CONCLUSION

Result

The research and technology in this region are continuously updating gradually. This effort shows us the chance of the blood sample.

The underneath mentioned image is pass through pre-processing to obtain the behavior and the prototype of a cancer cell.

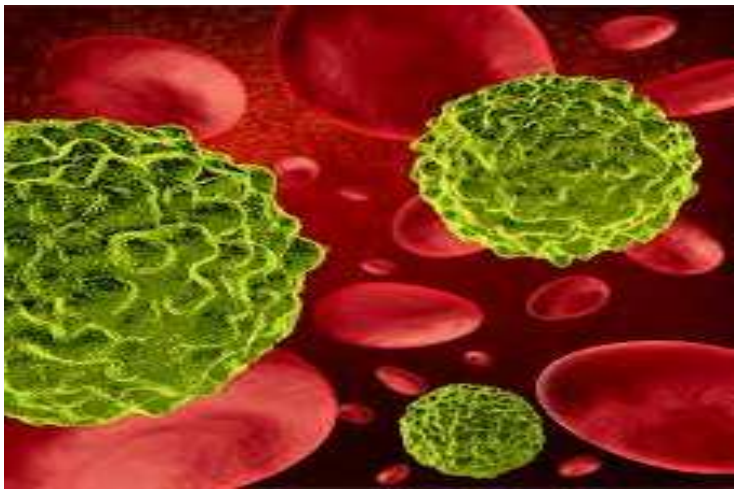


Figure 2. Blood Sample Image

The image is approved through the whole procedure so that the software gives the result precisely. The next figure shows how this software works by using this image processing technique.

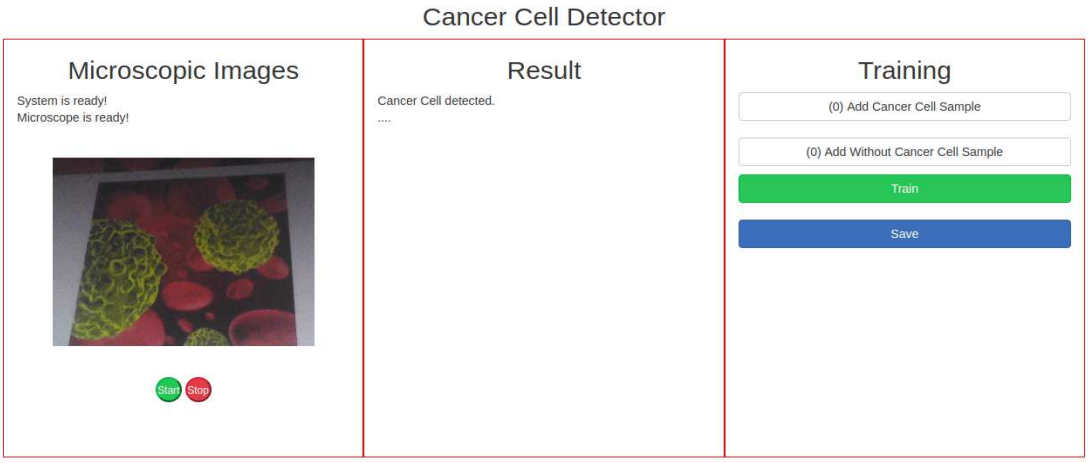


Figure 3. Screenshot of the Cancer Cell Detector

The image is passed through this software will first go through an image detection process that is, its a blood sample or not. After this, it will enhance and segment the image so that it can read each and every pixel of the image. Then through pattern detection, it will check whether the image having a cancer cell or not after counting the share of the foreign body in the small part and likewise it will find the same calculation in other segments also and calculate the possibility of the cancer cell.

Future scope: this work will help in

Download the article from www.medrech.com

detecting the stages of cancer in the blood and if we train our software with different input images it will easily help in the medical field and also provide precautions as an output.

CONCLUSION

Cancer is one of the major cause of death among these days. In the diagnosis process, due to the wide range of features associated with cell abnormalities some of them may be missed or misinterpreted. There is also a number of false positive findings and therefore a lot of unnecessary biopsies may be required. There are many diagnosis algorithms have been developed to give an accurate diagnosis and to reduce the number of cancer cell cells. Through this software, it is easy to get the probability of having cancer as it is also not so expensive. It's just we need to train our software in such a way that it can recognize the pattern of cancer cell as well as the behaviour of the cell so that it can recognize the probability of cancer easily. This software, we include image processing with the help of python, tensor flow as well as GUI for Graphics form. Python language is tremendously helpful as because of many reasons. Python is efficient enough in comparison to other and most of the library is available in it. Python has more community support and tensor flow which is written in python can run CPU as well as GUI, which give a more accurate result. These all combine to run this software easily and accurately. This also clears that it is not so expensive as other diagnosis processes is. Cancer is one of the oldest disease and a lot of research has been carried out in this field. Cancer is not a single disease rather a collection of multiple diseases thus a single test cannot diagnose it. But this software can help people who live in rural areas, those who do not have that much many for diagnosis of cancer.

REFERENCES

1. Beema Akbar, Varun P Gopi, V Suresh Babu "Colon cancer detection based on structural and statistical pattern recognition" IEEE 2015 2nd International Conference on Electronics and Communication Systems (ICECS) **INSPEC Accession Number:** 15220251 **DOI:** 10.1109/ECS.2015.7124883
2. S. Kalaivani, Pramit Chatterjee, Shikhar Juyal, Rishi Gupta "Lung cancer detection using digital image processing and artificial neural networks" 2017 International conference of Electronics, Communication, and Aerospace Technology (ICECA) **INSPEC Accession Number:** 17433048 **DOI:** 10.1109/ICECA.2017.8212773
3. Arushi Tetarbe ; Tanupriya Choudhury ; Teoh Teik Toe ; Seema Rawat "Oral cancer detection using data mining tool" 2017 3rd International Conference on Applied and Theoretical Computing and Communication Technology (iCATccT) **INSPEC Accession Number:** 17858852 **DOI:** 10.1109/ICATCCT.2017.8389103
4. Priya Darshini Velusamy ; Porkumaran Karandharaj "Medical image processing schemes for cancer detection: A survey" 2014 International Conference on Green Computing Communication and Electrical Engineering (ICGCCEE) **INSPEC Accession Number:** 14665933 **DOI:** 10.1109/ICGCCEE.2014.6922267
5. Gawade Prathamesh Pratap; R.P. Chauhan "Detection of Lung cancer cells using image processing techniques" 2016 IEEE 1st International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES) INSPEC Accession Number: 16672910 **DOI:** 10.1109/ICPEICES.2016.7853347
6. M. Saritha ; B. B. Prakash ; K. Sukesh ; B. Shrinivas "Detection of blood cancer in microscopic images of human blood samples: A review" 2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT) **INSPEC Accession Number:** 16487247 **DOI:** 10.1109/ICEEOT.2016.7754751
7. Preeti Jagadev, H.G. Virani, "Detection of leukemia and its types using image processing and machine learning" 2017 International Conference on Trends in Electronics and Informatics (ICEI) **INSPEC**

Download the article from www.medrech.com

Accession Number: 17564157
DOI: 10.1109/ICOEI.2017.8300983

8. Mohammed Bilal N Shaikh; Sachin Deshpande "Computer-aided leukemia detection using digital image processing techniques" 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT) **INSPEC Accession Number:** 17489746
DOI: 10.1109/RTEICT.2017.8256613
9. Wassim El Hajj Chehade, Riham Abdel Kader, Ali El-Zaart, "Segmentation of MRI images for brain cancer detection" 2018 International Conference on Information and Communications Technology (ICOIACT) **INSPEC Accession Number:** 17735721
DOI: 10.1109/ICOIACT.2018.8350721
10. Miss. Shrutika Santosh Hunnur, Akshata Raut, Swati Kulkarni "Implementation of image processing for detection of brain tumors" 2017 International Conference on Computing Methodologies and Communication (ICCMC) **INSPEC Accession Number:** 17544904
DOI: 10.1109/ICCMC.2017.8282559
11. D. Altunbay et al., "Color Graphs for Automated Cancer Diagnosis and Grading", *IEEE Trans. Biomedical Eng.*, vol. 57, no. 3, pp. 665-674, Mar 2010.
12. Chan Hwang See, Raed A. Abd-Alhameed, Siau Wei Jonis Chung, Dawei Zhou, Hussain Al-Ahmad, and Peter S. Excell "The Design of a Resistively Loaded Bowtie Antenna for Applications in Breast Cancer Detection Systems" IEEE Transactions on antenna and propagation, vol. 60, no. 5, May 2012.
13. Hisao Asamura, Kari Chansky, John Crowley, Peter Goldstraw, Valerie W. Rusch, Johan F. Vansteenkiste, Hirokazu Watanabe, Yi-Long Wu, Marcin Zielinski, David Ball, Ramon Rami-Porta, "The International Association for the Study of Lung Cancer Lung Cancer Staging Project: Proposals for the Revision of the N Descriptors in the Forthcoming 8th Edition of the TNM Classification for Lung Cancer", *Journal of Thoracic Oncology*, vol. 10, no. 12, pp. 1675-1684, December 2015.
14. Fauziah Kasmin, Anton Satria Prabuwono, Azizi Abdullah, "Detection Of Leukemia In Human Blood Sample Based On Microscopic Images: A Study", *Journal of Theoretical and Applied Information Technology*, vol. 46, no. 2, December 2012.
15. A. Sindhu, S. Meera, "A Survey on Detecting Brain Tumorinmri Images Using Image Processing Techniques", *International Journal of Innovative Research in Computer and Communication Engineering*, vol. 3, no. 1, January 2015.
16. Himali P. Vaghela, Hardik Modi, Manoj Pandya, M.B. Potdar, "Leukaemia Detection using Digital Image Processing Techniques", *International Journal of Applied Information Systems (IJAIS)*, November 2015.
17. S Mohapatra, D. Patra, "An ensemble classifier system for early diagnosis of acute lymphoblastic leukemia in blood microscopic images", *Neural Computing and Applications.*, vol. 24, no. 7-8, pp. 1887-1904, 2014.
18. Rajesh Kumar, "Detection and Classification of Cancer from Microscopic Biopsy Images Using Clinically Significant and Biologically Interpretable Features", *Hindawi Publishing Corporation Journal of Medical Engineering*, vol. 2015, 2015.
19. M. K. Beyer, C. C. Janvin, J. P. Larsen, D. Aarsland, "An MRI study of patients with Parkinson's disease with mild cognitive impairment and dementia using voxel-based morphometry", *J. Neurol. Neurosurg Psychiatry*, vol. 78, no. 3, pp. 254-259, March 2007.
20. A. Mustaqeem, A. Javed, T. Fatima, "An Efficient Brain Tumor Detection Algorithm Using Watershed & Thresholding Based Segmentation", *International Journal of Image Graphics and Signal Processing*, vol. A, no. 10, pp. 34-39, 2012.

Download the article from www.medrech.com