Smart System for Farmers to Analyze Leaf Disease, Quora Chat Box and Online Marketing

M. Jasmin, M. Susila, Dr.M. Sundararajan

Abstract: The recognizable proof of infection on the plant is a vital key to keep a substantial loss of yield and the amount of horticultural item. The indications can be seen on the pieces of the plants, for example, leaf, stems, sores and natural products. The leaf demonstrates the indications by evolving shading, demonstrating the marks on it. This recognizable proof of the malady is finished by manual perception and pathogen discovery which can devour additional time and may demonstrate exorbitant. The point of the venture is to distinguish and group the infection precisely from the leaf pictures. The means required in the process are Preprocessing, Practicing and Identification. The sickness considered are Powdery Mildew, Downey Mildew which can make substantial misfortune paddy crop. For distinguishing proof of illness highlights of leaf, for example, real hub, minor pivot and so forth are separated from leaf and given to classifier for characterization.

Keywords: Catchphrases Leaf Division, Python Programming, Information Munging, Efficient Achievability, Specialized Plausibility, System Testing; Blur Soften Image, Tesseract.

PRESENTATION

Presently days, another idea of shrewd cultivating has been presented where the field conditions are controlled and observed utilizing oneself working frameworks. The self-acknowledgment of the infection depends on the recognizable proof of the manifestations of ailment. So data about the sickness event could be rapidly and precisely given to the ranchers, specialists and scientists. This thus diminishes the checking of huge field by individual. In infection acknowledgment from picture the key is to separate the trademark highlight of the sick locale. As indicated by the malady the highlights may fluctuate.

The highlights those are extricated out from picture are color, sizes, surface etc. Different times for location of the illness more highlights are removed and these separated element would build the equipment just as programming cost. This upcoming cause's increment in the intricacy and the calculation duration. Thus it is important to lessen the component information. The event of the malady on the plant may result in noteworthy misfortune in both standard just as the amount of farming item.

It can deliver the negative effect on the nations whose profitable are principally subject to the farming. Thus the recognition of the illness in the prior layers is imperative to stay away from the misfortune as far as quality, amount and money. Normally the techniques that are embraced for checking and the board of plant leaf sickness are manual. One such major approach is stripped eye perception. Be that as it may, the prerequisite of this strategy is persistent checking of the field by an individual having predominant information about the plants and its comparing ailments. In addition, selecting such an individual would may demonstrate expensive. Another methodology is looking for counsel from the master which may include the expense. Additionally, the master must be accessible in time else it might results in misfortune. Finding of ailment on plant should likewise be possible in research center testing.

M. Jasmin, Assistant Professor, Department of Electronics and Communication Engineering, BIST, BIHER, Bharath Institute of Higher, Education & Research, Selaiyur, Chennai. E-mail: jasmin.ece@bharathuniv.ac.in

M. Susila, Assistant Professor, Department of Electronics and Communication Engineering, BIST, BIHER, Bharath Institute of Higher Education & Research, Selaiyur, Chennai.

Dr.M. Sundararajan, Professor, Department of Electronics and Communication Engineering, BIST, BIHER, Bharath Institute of Higher Education & Research, Selaiyur, Chennai.

In any case, this strategy requires tasteful research facility conditions alongside expert learning. The pathogen identification techniques can give progressively precise outcomes. As the tests are done of field the expense might be high and could be tedious. This paper proposes a framework which can give progressively precise outcomes identified with the distinguishing proof and characterization of ailment. It attempts to supplant the need of the specialists to particular degree. Here, the caught picture is primarily implementing to rescale it and afterward changed over to HSI shading empty position by utilizing division. The highlights, for example, real hub, minor hub, unpredictability are extricated from the picture. In the last advance, these highlights are given to the classifier to characterize the sickness happened on the leaf.

LITERATURE SURVEY

1. Plant Leaf Illness Observation and Categorization based on CNN with LVQ designing me like Sardogan; Adem Tuncer; Yunus Ozen IEEE 2018.

The early location of illnesses is essential in farming for a productive harvest crop. The fungal area, late scourge, septoria leaf area and yellow bended leaf ailments influence the yield nature of crops. Programmed strategies for grouping of plant infections likewise help making a move in the wake of recognizing the side effects of leaf illnesses. This paper shows a Convolutional Neural Network (CNN) model and Learning Vector Quantization (LVQ) calculation depends strategy for crop leaf illness recognition and arrangement. The dataset having 500 pictures of crop leaves with four manifestations of infections. We have displayed a CNN for programmed include out coming and grouping. Shading data is effectively utilized for crop leaf infection inquires about. In our region, the channels are connected to three channels dependent on RGB segments. The LVQ has been sustained with the yield highlight vector of convolution region to prepare the system. The trial outcome approve that the upcoming strategy adequately perceives four distinct sorts of crop leaf illnesses.

2. Detection of leaf sicknesses and grouping utilizing computerized picture handling R. Meena Prakash; G.P. Saraswathy; G. Ramalakshmi; K.H. Mangaleswari; T. Kaviya IEEE 2018.

In this paper, picture handling procedures are utilized to identify the crop leaf infections. The goal of this time is to execute picture investigation and order strategies for location of leaf ailments and arrangement. The introduced system comprises of four sections. They are (1) picture preprocessing (2) Segmentation of the leaf utilizing K-implies bunching to decide the infected regions (3) include outsourcing and (4) Classification of maladies. Surface highlights are separated utilizing factual Gray-Level Co-Occurrence Matrix (GLCM) highlights and characterization is finished utilizing Support Vector Machine (SVM).

3. Robotized Image Observing System for Deep Understanding-Based Crop Plant Leaf Disease Identifying and Recognition Machine. G. De Luna; Elmer P. Dadios; Argel A. Bandala. IEEE 2018.

Savvy cultivating framework utilizing fundamental foundation is an inventive innovation that improves the purity and amount of agrarian creation in the nation with tomato crop. From tomato crop cultivating take contemplations from different factors, for example, condition, soil, and measure of daylight, presence of sicknesses can't be maintained a strategic distance from. The ongoing researches in PC vision made conceivable by profound grasping has made ready for lens-helped ailment analysis for tomato. This investigation built up the inventive arrangement that gives effective sickness identification in tomato plants. An engine controlled picture catching region was prepared to catch four sides of each crop plant to distinguish and perceive leaf infections. A particular type of tomato which is Diamante Max was utilized as the guinea pig. The framework was intended to recognize the infections in particular Phoma Rot, Leaf Miner, and Target Spot. Utilizing dataset of 4,923 pictures of sick and sound crop plant leaves gathered under actional conditions, we make a profound convolutional neural system to recognize some infections or nonappearance off. The framework utilized Convolutional Neural Network to distinguish which of the crop illnesses is available on the observed tomato plants. The F-RCNN prepared peculiarity discovery demonstrate delivered a certainty score of 80 % while the Transfer understanding infection acknowledgment show accomplishes an exactness of 95.75 %. The mechanized picture catching framework was actualized in genuine and enrolled a 91.67 % exactness in the acknowledgment of the crop plant leaf sicknesses.

4. SVM Classifier depends Crop Leaf Illness Location. Pranjali B. Padol; Anjali A. Yadav, IEEE 2018.

Grape establishes a standout amongst the most broadly developed natural product crops in the India. Profitability of grape diminishes because of contaminations brought about by different kinds of sicknesses on its natural product, stem and leaf. Leaf infections are fundamentally brought about by

microorganisms, growths, infection and so forth. Maladies are a main consideration constraining natural product generation and sicknesses are frequently hard to control. Without exact illness conclusion, legitimate control activities can't be utilized at the fitting period. Picture happening is one of the generally utilized method is received for the crop leaf sicknesses identification and grouping. This paper is planned to help in the identification and order leaf sicknesses of crop utilizing SVM grouping method. Primarily the infected area is discovered utilizing division by K-implies bunching, at that point both shading and surface highlights are extricated. At long last arrangement procedure is utilized to identify the sort of leaf ailment. The proposed framework can effectively distinguish and characterize the analyzed malady with exactness of 88.89%.

EXISTING SYSTEM

In present day, OpenCV is the most extensive open source library for PC vision and it has vast client network. OpenCV has substantially more capacities for PC vision than MATLAB. A considerable lot of its capacities are actualized on GPU. The library is as a rule persistently refreshed (a refreshed adaptation is discharged around each 3 to 4 months). All in all C++ OpenCV code runs quicker than MATLAB code. OpenCV has a bigger number of capacities for PC vision than MATLAB. A large number of its capacities are executed on GPU [3]. In like manner C++ OpenCV code runs quicker than MATLAB code however when contrasted with OpenCV C++ OpenCV python is vastly improved than the C++, python is a superior and less demanding than the other programming language like C++. In PC vision, we are looked with comparative decisions. Which apparatus should a PC vision engineer/developer learn — OpenCV utilizing C++, OpenCV utilizing Python, or MATLAB, with respect to the present we have a couple of choices to browse. Before in past there were nothing worth mentioning libraries for PC vision. We become acquainted with about these examinations by related books which were accessible and begun coding own smaller than usual library of PC vision calculations [6].

Like MATLAB, OpenCV was likewise made for Image preparing and utilized as option and a lot quicker device than the other reproduction forms. Each bundle in OpenCV, the capacity and information structure were planned with the Image Processing coder. MATLAB, on the opposite side, we get nearly everything without exception on the planet as tool stash. Despite the fact that MATLAB is a generally simple language to get to holds with, this abnormal state scripting language, turns out to be slower now and again. In such cases, OpenCV works better and delivers exact outcomes. Memory the board or some other low-level programming issues. Moreover, it tends to be anything but difficult to deal with some code to model your picture preparing thought. To peruse in a picture from document and show it. One of the eminent commitment of the open source network to the logical world is Python.

To begin with, different successive LR tag casings of a similar scene are taken as the information perceptions. Second, the successful picture enrollment is done to acquire exact movement parameters between the LR input pictures, which is our primary core interest. Third, the picture recreation is actualized to get a HR remade picture [7]. Exact picture enrollment is of fundamental significance for the accomplishment of SR strategies. On one hand, the recurrence approach proposed by P. Vandewalle in [5] beats past recurrence techniques and some spatial space strategies. It works especially well on pictures with solid recurrence content in various ways, and it fulfills the subpixel precision in the bigger interpretation and turn estimation [8].

In any case, Vandewalle's calculation has the lack that it expect movement demonstrate contains just pivot and interpretation, which leaves the scaling development unsolved. [9] This enrollment calculation is basically utilized for tag picture SR remaking, we may get an obscured HR picture, which can be seen from the exploratory outcomes [10]. Then again, the great FMT calculation, for the most part utilized in picture mosaic [7], can execute scaling, pivot and interpretation estimation between casings, however it is just on the number pixel level, which can't meet the prerequisites of SR for tag picture. On the base of above investigation, a novel recurrence space enlistment technique is proposed.

Disadvantages of a Existing System

1. Poor image resolution.
2. Less Accuracy
3. Poor lighting and low differentiation
4. Higher Computational Cost
5. Absence of guidelines of the plate of the vehicles
6. Inappropriately sectioned characters will result in misrecognized characters.

PROPOSED SYSTEM

The initial step is to get pictures of different leafs from the Digital camera or any source. There are different picture preparing procedures connected to distinguish the infection. Picture handling is utilized to get helpful highlights that can demonstrate critical for further procedure. With picture preparing, SVM and k-implies is additionally utilized, k-implies is a calculation and SVM is the classifier. At that point next different procedures are to use to get and result close by. Flowchart demonstrates the stream of the proposed framework and the vision subordinate discovery calculation. The underlying advance is to get the example pictures of the considerable number of leaves from the camera.

The stream of the procedure of the proposed framework:

1. Input Image.
2. Blur Soften Image.
3. Changing over the information picture from RGB to HSV position.
4. Color Thresholding.
5. Separating the Foreground and the Background.
6. Leaf segmentation.
7. Feature Extraction of the leaf.
8. Disease recognition using SVM and K-means.
9. Desired result.

Advantages of Proposed System

1. High output efficiency.
2. User friendly.
3. Less time consumption.
4. User friendly.
5. Characters can be recognized correctly.

Flow Diagram
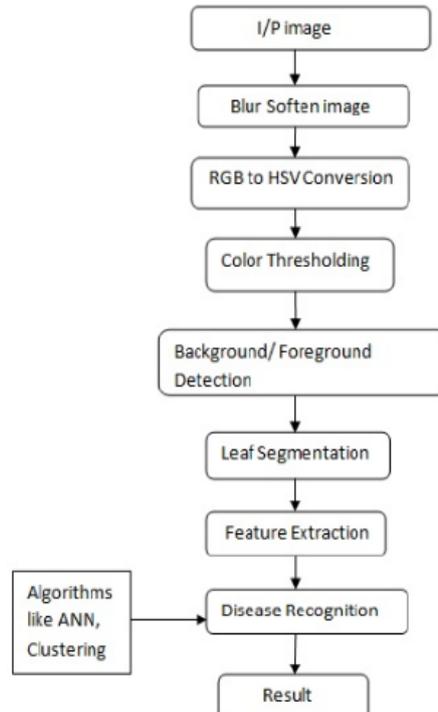
SYSTEM CONFIGURATION AND DIAGRAMS

System configuration software requirements

- Operating System   : Windows 7
- Technology   : Python
- Web Technologies   : Html, Java Script, CSS

- IDE   : Netbeans
- Web Server   : Tomcat
- Database   : MySQL
- Java Version   : J2SDK1.5

Hardware Requirements

- Hardware   : Pentium Dual Core
- Accuracy   : 2.80 GHz
- RAM   : 4GB
- Hard Disk   : 500 GB
- Key Board   : Standard Windows Keyboard
- Mouse   : Button Mouse
- Screen   : SVGA

Class Diagram

Class Diagram is the formal structure square of item situated outsourcing. It is used for both normal estimated visioning of the efficient of the format and furthermore for the nitty gritty lecture prepared an interpretation of the types into source code. Class formats can similar to be used for document presentation. The classes in a class chart can talk to both the basical things as well as communications in the implementation and the articles to be modified. In the class outlines these classes are talken to with the crates which having some sections.

- The tooper region holding the name of the class
- The mid region holding the properties of the class

The bottom region gives the ideas or tasks of the class which can perform or attempt.
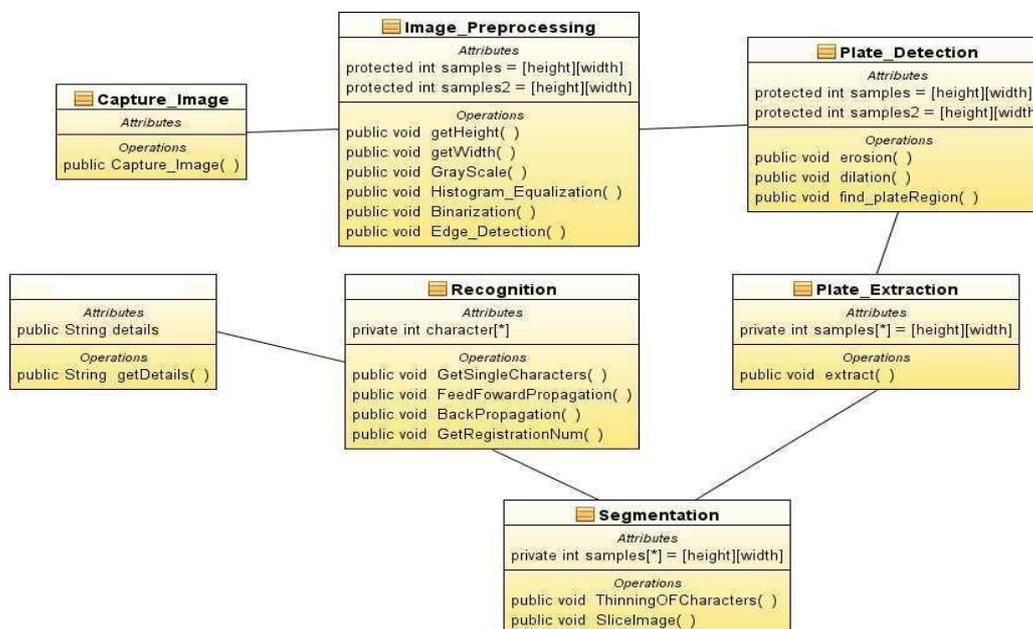
System Testing

The reason for testing is to invent problems. Testing is the process toward endeavoring to find one possible thing or short forming in a work thing. It returns an outcome to confirm the useness of things, sub materials, gatherings or potentially a full filed item It is the process toward making coding with the aim of ensuring that the practical outcome satisfies its requirements and customer wants and may not blasted in an unacceptable way. There are many various sorts of test. Each test type tends to a particular testing prerequisite.

Types of Tests

Unit test

Unit testing may have the structure of practices that accepts that the inward program rationale is processing appropriately, and that equipment inputs produce substantial crops. All departments and

inward code result ought to be accepted. It is the happening of personal programming units of the materials.

It is happened after the completion of an individual unit approach combines. This is an essential thing that relies upon data of its improvement and is prominent. Unit tests perform basical tests at part level and test a individual business procedure, application, as both as framework management.

Unit tests confirms that everything of a proper way of a perfection matters how works on precisely to the out coming possibilities and having plainly specified sources of info and anticipated results.

Blending Testing

Blending tests are intended to examine to organizing programming segments to confirm whether they truly keep moving as one programine. Testing is celebration driven and is increasingly bothered about the formal outcomes of visions or crops.

Mutual understanding tests exhibit that despite of the real that the parts were independently fulfledgement, as visioning by quickly unit testing, the blend of levels is right and common. Mix testing is explicitly gone for unprotecting the problems that emerge from the unit of segments.

Functional Testing

Real tests returns exact exhibitions that maintains practice are accessible as mentioned by the business and featured necessities, framework work material, and resultant manuals.

Utilitarian testing is concentrated on the accompanying material:

Valid Input   : understanding classes of substantial maters must be acknowledged.

Invalid Input   : distinguished things of invalid matter must be rejected.

Scope   : scope must be proved returns the outcome.

Yield   : recognized classes of utilization yields must be worked out.

Frameworks/Procedures   : interfacing outworks or process must be summoned.

Team management and planning of practical tests is figured around prerequisites, key possibilities, or extraordinary practices. What's more, methods inclusion comparing to identifying the Business process forms; matter crops, guessing forms, and progressive process must be considered for confirming.

Before useful testing is compled, extra performs are distinguished and the powerful estimation of present tests is completed.

System Testing

System testing confirms that the entire team understanding programming framework connects the prerequisites. It needs a setup to ensure that and obvious results. A case of main work testing is the design situated framework mix test. Framework process carries on procedure portrayals and works, underscoring pre-driven procedure performances and reconciliation observations.

White Box Testing

White Box Testing is a processing in which the item analyzer knows about the in performing operations, structure and language of the item, or possibly its convincing. It is reason. It is used to test domains that can't be a perfect to from a revelation level.

Discovery Testing

Discovery Testing will be practicing the item with no proper guidness of the internal activities, format or language of example being practiced. Finding tests, as most unique sorts of things, must be complicated from a conclusive source record, for example, maintaining or prerequisites archive, for each, determination or requirements report.

It is an attempting in the item comes on test is managed, as a revelation .We can't "see" into it. The result gives sources of info and reacts to crops without thinking about how the material functions.

Unit Testing

Unit testing is normally led as a major aspect of a combined code and unit test period of the material lifecycle, in spite of the realistic things that it isn't remarkable for performing and unit checking to be driven as two specific layers.

Test Strategy and Approach

Field results will be calculated to be physically and conveniently checks will be written in exactly.

Test Objectives

- All matter requirements must performs legitimately.
- Records must be enacted from the distinguished perfections.
- The entry layout, texts and responses must not return to be conceded.

Features Need to Tested

- Confirms that the sections are of the perfect management
- No matter how passages ought to be confirmed
- All perfections should take the person to the perfect page.

INTEGRATION TESTING

Programming reconciliation confirming is the gradual joining testing of at least some incorporated programming parts on a perfect stage to create un proper things brought about by outsourcing abandons. The undertaking of the joining test is to visible that parts or outsourcing applications, for example parts in a item framework or – one proper up – programming applications at the perfectional levels – communicate not with mistake.

Test Outcomes

All the performances referenced above passed efficiently. No imperfections practiced.

Acceptance Testing

Client Acceptance checking is a layout section of any undertaking and maintains noteworthy calculates by the end performs. It additionally confirms that the layout meets the utilitarian requirements.

Test Outcomes

All the practices referenced above explicts effectively. No imperfections practiced.

CONCLUSION

The utilization of mechanized observing and the board frameworks are increasing expanding request with the innovative progression. In agrarian field loss of yield fundamentally happens because of boundless of infection. Generally the recognition and distinguishing proof of the ailment is seen when the sickness advances to serious stage.

Accordingly, causing the misfortune as far as yield, time and cash. The proposed framework is fit for distinguishing the ailment at the prior stage when it happens on the leaf. Subsequently sparing the misfortune and decreasing the reliance on the master to a limited degree is conceivable. It can give the assistance to an individual having less information about the illness.

Contingent upon these objectives, we need to remove the highlights relating to the illness.

REFERENCES

[1] Krishnamoorthy P., & Jayalakshmi T. (2012). Preparation, characterization and synthesis of silver nanoparticles by using phyllanthusniruri for the antimicrobial activity and cytotoxic effects, *Journal of Chemical and Pharmaceutical Research, 4*(11), 4783-4794.

[2] Amir, M., Gungunes, H., Slimani, Y., Tashkandi, N., El Sayed, H.S., Aldakheel, F., Sertkol, M., Sozeri H., Manikandan A., Ercan, I., & Baykal, A. (2019). Mössbauer studies and magnetic properties of cubic CuFe 2 O 4 nanoparticles. *Journal of Superconductivity and Novel Magnetism*, *32*(3), 557-564.

[3] Raj M.S., Saravanan T., & Srinivasan V. (2014). A modified direct torque control of induction motor using space vector modulation technique. *Middle - East Journal of Scientific Research, 20*(11), 1572-1574.

[4] Khanaa, V., & Thooyamani, K.P. (2013). Using triangular shaped stepped impedance resonators design of compact microstrip quad-band. *Middle-East Journal of Scientific Research*, *18*(12), 1842-1844.

[5] Asiri S., Sertkol M., Güngüneş H., Amir M., Manikandan A., Ercan I., & Baykal A. (2018). The Temperature Effect on Magnetic Properties of NiFe 2 O 4 Nanoparticles. *Journal of Inorganic and Organometallic Polymers and Materials, 28*(4), 1587-1597.

[6] Thaya, R., Malaikozhundan, B., Vijayakumar, S., Sivakamavalli, J., Jeyasekar, R., Shanthi, S., Vaseeharan, B., Ramasamy, P., & Sonawane, A. (2016). Chitosan coated Ag/ZnO nanocomposite and their antibiofilm, antifungal and cytotoxic effects on murine macrophages. *Microbial pathogenesis*, *100*, 124-132.

[7] Kolanthai, E., Ganesan, K., Epple, M., & Kalkura, S.N. (2016). Synthesis of nanosized hydroxyapatite/agarose powders for bone filler and drug delivery application. *Materials Today Communications*, *8*, 31-40.

[8] Thilagavathi, P., Manikandan, A., Sujatha, S., Jaganathan, S.K., & Arul Antony, S. (2016). Sol–Gel Synthesis and Characterization Studies of NiMoO4 Nanostructures for Photocatalytic Degradation of Methylene Blue Dye. *Nanoscience and Nanotechnology Letters*, *8*(5), 438-443.

[9] Thamotharan C., Prabhakar S., Vanangamudi S., & Anbazhagan R. (2014). Anti-lock braking system in two wheelers. *Middle - East Journal of Scientific Research, 20*(12), 2274-2278.

[10] Thamotharan C., Prabhakar S., Vanangamudi S., Anbazhagan R., & Coomarasamy C. (2014). Hydraulic rear drum brake system in two wheeler. *Middle - East Journal of Scientific Research, 20*(12), 1826-1833.

[11] Vanangamudi S., Prabhakar S., Thamotharan C., & Anbazhagan R. (2014). Collision control system in cars. *Middle - East Journal of Scientific Research, 20*(12), 1799-1809.

[12] Vanangamudi S., Prabhakar S., Thamotharan C., & Anbazhagan R. (2014). Drive shaft mechanism in motor cycle. *Middle - East Journal of Scientific Research, 20*(12), 1810-1815.

[13] Anbazhagan R., Prabhakar S., Vanangamudi S., & Thamotharan C. (2014). Electromagnetic engine. *Middle - East Journal of Scientific Research, 20*(3), 385-387, 2014.

[14] Kalaiselvi, V.S., Prabhu, K., & Mani Ramesh, V.V. (2013). The association of serum osteocalcin with the bone mineral density in post-menopausal women. *Journal of clinical and diagnostic research: JCDR*, *7*(5), 814-816.

[15] Kalaiselvi, V.S., Saikumar, P., & Prabhu, K. (2012). The anti mullerian hormone-a novel marker for assessing the ovarian reserve in women with regular menstrual cycles. *Journal of clinical and diagnostic research: JCDR*, *6*(10), 1636-1639.

[16] Arul, K.T, Manikandan, E., Ladchumananandasivam, R., & Maaza, M. (2016). Novel polyvinyl alcohol polymer based nanostructure with ferrites co-doped with nickel and cobalt ions for magneto-sensor application. *Polymer International*, *65*(12), 1482-1485.

[17] Das, M.P., & Kumar, S. (2015). An approach to low-density polyethylene biodegradation by Bacillus amyloliquefaciens. *3 Biotech*, *5*(1), 81-86.

[18] Vanangamudi S., Prabhakar S., Thamotharan C., & Anbazhagan R. (2014). Turbo charger in two wheeler engine. *Middle - East Journal of Scientific Research, 20*(12), 1841-1847.

[19] Vanangamudi S., Prabhakar S., Thamotharan C., & Anbazhagan R. (2014). Design and calculation with fabrication of an aero hydraulwicclutch. *Middle - East Journal of Scientific Research, 20*(12), 1796-1798, 2014.

[20] Saravanan, T., Raj, M.S., & Gopalakrishnan, K. (2014). VLSI based 1-D ICT processor for image coding. *Middle-East Journal of Scientific Research*, *20*(11), 1511-1516.

[21] Ajona, M., & Kaviya, B. (2014). An environmental friendly self-healing microbial concrete. *International Journal of Applied Engineering Research*, *9*(22), 5457-5462.

[22] Hemalatha, R., & Anbuselvi, S. (2013). Physicochemical constituents of pineapple pulp and waste. *Journal of Chemical and Pharmaceutical Research*, *5*(2), 240-242.

[23] Langeswaran, K., Revathy, R., Kumar, S.G., Vijayaprakash, S., & Balasubramanian, M.P. (2012). Kaempferol ameliorates aflatoxin B1 (AFB1) induced hepatocellular carcinoma through modifying metabolizing enzymes, membrane bound ATPases and mitochondrial TCA cycle enzymes. *Asian Pacific Journal of Tropical Biomedicine*, *2*(3), S1653-S1659.

[24] Masthan, K.M.K., Babu, N.A., Dash, K.C., & Elumalai, M. (2012). Advanced diagnostic aids in oral cancer. *Asian Pacific Journal of Cancer Prevention*, *13*(8), 3573-3576.

[25] Asiri S., Güner S., Demir A., Yildiz A., Manikandan A., & Baykal A. (2018). Synthesis and Magnetic Characterization of Cu Substituted Barium Hexaferrites. *Journal of Inorganic and Organometallic Polymers and Materials, 28*(3), 1065-1071.

[26] Vellayappan, M.V., Jaganathan, S.K., & Manikandan, A. (2016). Nanomaterials as a game changer in the management and treatment of diabetic foot ulcers. *RSC Advances*, *6*(115), 114859-114878.

[27] Vellayappan, M.V., Venugopal, J.R., Ramakrishna, S., Ray, S., Ismail, A.F., Mandal, M., Manikandan, A., Seal, S., & Jaganathan, S.K. (2016). Electrospinning applications from diagnosis to treatment of diabetes. *RSC Advances*, *6*(87), 83638-83655.

[28] Bavitra, K., Sinthuja, S., Manoharan, N., & Rajesh, S. (2015). The high efficiency renewable PV inverter topology. *Indian Journal of Science and Technology*, *8*(14), 1.

[29] Vanangamudi, S., Prabhakar, S., Thamotharan, C., & Anbazhagan, R. (2014). Design and fabrication of dual clutch. *Middle-East Journal of Scientific Research*, *20*(12), 1816-1818.

[30] Sandhiya, K., & Kaviya, B. Safe bus stop location in Trichy city by using gis. *International Journal of Applied Engineering Research*, *9*(22), 5686-5691.

[31] Selva Kumar, S., Ram Krishna Rao, M., Deepak Kumar, R., Panwar, S., & Prasad, C.S. (2013). Biocontrol by plant growth promoting rhizobacteria against black scurf and stem canker disease of potato caused by Rhizoctonia solani. *Archives of Phytopathology and Plant Protection*, *46*(4), 487-502.

[32] Sharmila, S., & Jeyanthi Rebecca, L. (2012). GC-MS Analysis of esters of fatty acid present in biodiesel produced from Cladophora vagabunda. *Journal of Chemical and Pharmaceutical Research*, *4*(11), 4883-4887.

[33] Ramkumar, M., Rajasankar, S., Gobi, V.V., Dhanalakshmi, C., Manivasagam, T., Thenmozhi, A.J., Essa, M.M., Kalandar, A., & Chidambaram, R. (2017). Neuro protective effect of Demethoxycurcumin, a natural derivative of Curcumin on rotenone induced neurotoxicity in SH-SY 5Y Neuroblastoma cells. *BMC complementary and alternative medicine*, *17*(1), 217.

[34] Selvi, S.A., & Sundararajan, M. (2016). A Combined Framework for Routing and Channel Allocation for Dynamic Spectrum Sharing using Cognitive Radio. *International Journal of Applied Engineering Research*, *11*(7), 4951-4953.

[35] Krupaa R.J., Sankari S.L., Masthan K.M.K., & Rajesh E. (2015). Oral lichen planus: An overview. *Journal of Pharmacy and Bioallied Sciences, 7,* S158-S161.

[36] Srividya, T., & Saritha, B. (2014). Strengthening on RC beam elements with GFRP under flexure. *International Journal of Applied Engineering Research*, *9*(22), 5443-5446.

[37] Kumar, J., Sathish Kumar, K., & Dayakar, P. (2014). Effect of microsilica on high strength concrete. *International Journal of Applied Engineering Research*, *9*(22), 5427-5432.

[38] Saraswathy, R., & Saritha, B. (2014). Planning of integrated satellite township at Thirumazhisai. *International Journal of Applied Engineering Research*, *9*(22), 5558-5560.

[39] Saritha, B., Ilayaraja, K., & Eqyaabal, Z. (2014). Geo textiles and geo synthetics for soil reinforcement. *International Journal of Applied Engineering Research*, *9*(22), 5533-5536.

[40] Iyappan, L., & Dayakar, P. (2014). Identification of landslide prone zone for coonoor taluk using spatial technology. *International Journal of Applied Engineering Research*, *9*(22), 5724-5732.

[41] Kavitha, M., & Thomas, J. (2018). BAT Optimization Algorithm (BOA) for Optimal Cluster Selection and Unsupervised Hybrid Network Kernel Learning Support Vectors Clustering (UHNKLSVC) Algorithm. *Journal of Computational Information Systems, 14*(5), 56 - 63.

[42] Dr. Chaturvedi, A., Hussain, S.S. & Kumar, V. (2013).A Study of Mutable Check pointing Approach to Reduce the Overheads Associated with Coordinated Check pointing. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE), 1*(3), 6-10.

[43] Sen, B., & Vedanarayanan, V. (2016). Efficient Classification of Breast Lesion based on Deep Learning Technique.*Bonfring International Journal of Advances in Image Processing, 6*(1), 01-06.

[44] Srinivas, N., & Dr.Ramana Murthy, M.V. (2018). Web Based Audio-Video Information Summarization Algorithm (AVISA) for Videos and Audios.*. Journal of Computational Information Systems, 14*(3), 80 - 93.

[45] Kumuthaveni, R., & Dr. Chandra, E. (2018). A Study on Automatic Speech Recognition. *Journal of Computational Information Systems, 14*(4), 89 - 99.

[46] Tamailarasi, S., & Dr. Suguna, J. (2014).Detection of Moving Objects in a Video Sequence – A Comparative Study. *International Journal of Advances in Engineering and Emerging Technology, 5*(5), 211-216.

[47] Vidhya, A. (2014). Malware Clearance for Secure Commitment of OS-Level Virtual Machines. *Excel International Journal of Technology, Engineering and Management, 1*(2), 51-57.

[48] M.P. Anitha and S.S. Lijina, (2016). Encryption Based Hybrid DWT-SVD Watermarking Technique for Data Hiding. *Bonfring International Journal of Data Mining, 6*(3), 30-33.

[49] Mahmoudi, & Laylipour, C. (2015). A discrete binary version of the Forest Optimization Algorithm. *International Academic Journal of Innovative Research, 2*(12), 10-23.

[50] Yuvarajan, A., & Priyadharshini, V.M. (2014). Fixed Width Booth Multiplier Using Adaptive Conditional Probability Estimator. *International Journal of Communication and Computer Technologies, 2*(1), 56-63.