| Faculty | Sunil P. Jagtap |
|---|---|
| Title of Research Paper | Passivation of Low Carbon Steel Due to Conducting Polyaniline Based Paint |
| Journal | International Journal of Research in Engineering and Technology |
| ISSN No | 2321-7308 |
| Abstract | Conducting polyaniline powder was synthesized chemically and paints containing conducting polyaniline powder were applied on low carbon steel samples. Corrosion protection performance of the coating in 3.5 % sodium chloride solution up to 48 hours and 120 hours was evaluated by using electrochemical impedance spectroscopy. It has been found that the open circuit potentials of painted steel, after the initial decrease, have been shifted to noble direction. In addition, charge transfer values have been observed to increase due to passivation of steel by PANI-HCl pigment indicating anti corrosive nature of paint. Keywords: Conducting Polyaniline Based Paint; Low Carbon Steel; Corrosion Protection; Impedance Spectroscopy. |

| Faculty | Sunil P. Jagtap |
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| Title of Research Paper | Corrosion Prevention by Conducting Polyaniline Based Paint Coating on Low Carbon Steel |
| Journal | International Journal of Research in Advent Technology |
| ISSN No | 2321-9637 |
| Abstract | Conducting polyaniline power was synthesized chemically and paints containing polyaniline power were applied on low carbon steel samples. The conducting polyaniline power was characterized by UV-visible absorption spectroscopy and the morphology of paint coating on low carbon steel was studied by scanning electron microscopy. The corrosion protection performance of the coating was evaluated by using electrochemical impedance spectroscopy, alternating immersion and salt spray. It has been found that the 2 wt % polyaniline-hydrochloric acid based paint coating offers significant corrosion protection to low carbon steel in chloride medium. In addition, these paint coatings withstand drying and wetting cycles in atmosphere. |

| Faculty | S. P. Jagtap |
|---|---|
| Title of Research Paper | Conducting Polyaniline Based Paints on Hot Dip Galvanized Low Carbon Steel for Corrosion Protection |
| Journal | Bulgarian Chemical Communications |
| ISSN No | 0324-1130 |
| Abstract | Conducting polyaniline based paints have been applied on hot dip galvanized low carbon steel samples. The corrosion protection performance of these paints coating was evaluated by using Tafel plots impedance spectroscopy. It was found that the paint coating offered significant corrosion protection to hot dip galvanized low carbon steel in aqueous 3.5 wt % NaCl solution. |

| Faculty | S. P. Jagtap |
|---|---|
| Title of Research Paper | Conducting Polyaniline Based Paints on Hot Dip Galvanized Low Carbon Steel for Corrosion Protection |
| Journal | European Internet Centre For Impedance Spectroscopy |
| ISSN No | 03224-1130 |
| Abstract | Conducting polyaniline based paints have been applied on hot dip galvanized low carbon steel samples. The corrosion protection performance of these paints coating was evaluated by using Tafel plots impedance spectroscopy. It was found that the paint coating offered significant corrosion protection to hot dip galvanized low carbon steel in aqueous 3.5 wt % NaCl solution. |

| Faculty | Sunil P. Jagtap |
|---|---|
| Title of Research Paper | Conducting Polyaniline Based Paints on Low Carbon Steel for Corrosion Protection |
| Journal | Springer-Protection of Metals and Physical Chemistry of Surface |
| ISSN No | 2070-2051 |
| Abstract | Conducting polyaniline power was synthesized chemically and paints containing polyaniline power were applied on low carbon steel samples. The conducting polyaniline power was characterized by UV-visible absorption spectroscopy and the morphology of paint coating on low carbon steel was studied by scanning electron microscopy. The corrosion protection performance of the coating was evaluated by using potentiodynamic polarization techniques and electrochemical impedance spectroscopy. It has been found that the 2 wt % polyaniline-hydrochloric acid based paint coating offers maximum corrosion protection to low carbon steel in chloride medium. |

| Faculty | S. P.  Jagtap |
|---|---|
| Title of Research Paper | Corrosion Prevention by Conducting Polyaniline Based Paint Coating on Low Carbon Steel |
| Journal | J. Electrochemical Soc. of India |
| ISSN No | 0013-466x |
| Abstract | PANI-HCL based coatings are prepared. It was observed that the coating exhibited little corrosion protection in acidic medium. This can be attributed to the formation of non conducting emerldine base form of polyaniline. Optimization of the synthesis conditions is essential to improve the corrosion protection performance. |

| Faculty | Sunil P. Jagtap |
|---|---|
| Title of Research Paper | Fundamental Forces |
| Journal | Physics Education |
| ISSN No | 0970-5953 |
| Abstract | This article deals with the four fundamental forces, called the Electromagnetic force, Gravitational force, Strong nuclear force, and the Weak nuclear force. For a pair of particles (bodies) interacting under a force, presence of one particle is felt by another one through the exchange of one or more field quanta, which are essentially bosons. Electromagnetic and gravitational forces are short range forces. Though the strong nuclear forces are dominant in a nucleus, electromagnetic forces also play important role there. However, gravitational forces play key role in the astronomical phenomena. |

| Faculty | Dr. Shridhar Deo |
|---|---|
| Title of Research Paper | Modelling of flicker in wind turbine on a green building due to vertical wind shear |
| Journal | Power engineering and optimization conference (PEOCO),2014 IEEE 8th international |
| ISSN No | **INSPEC Accession Number** 14301200 |
| Abstract | Paper confers a newfangled empirical model to figure, flicker, instigated in the horizontal axis, upwind turbine, due to vertical wind shear, in continuous operation. Postulations, boundary curbs and limitations of the model are also depicted. In the proposed model, vertical wind shear, number of blades, blade length and tower height are echoed. The elegance of the model is that, it is expedient to range of heights of buildings on which the turbine is sited. Substantiation of model is carried out with comparative graphs revealed after fervent experimentation on a turbine in a tunnel with various heights of models of buildings. |

| Faculty | Dr. Shridhar Deo |
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| Title of Research Paper | Zero-Mass Scalar field interactions in the Robertson-Walker Universe |
| Journal | Acta Physical Hungerica |
| ISSN No | Print ISSN- 0231-4428 |
| Abstract | Considering spherically-symmetric Robertson-Walker metric, we have investigated the problem of zero-mass scalar field interactions in the presence of gravitational field. We have investigated the problem with and without the source term in the wave equation. For a physically realistic solution, the universe should be either open or flat. The physical interpretation of the solutions in connection with the deceleration parameter, the occurrence of "Big Bang" at the initial stage, the energy density, etc. have been investigated. |

| Faculty | Dr. Shridhar Deo |
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| Title of Research Paper | Brans-Dicke Cosmological Exact Solution In A Radiation Filled Robertson-Walker Universe |
| Journal | International, Theoretical Physics USA |
| ISSN No | Print ISSN- 0020-7748 |
| Abstract | In a recent paper Singh and Deo obtained the field equations in Brans-Dicke theory for a radiation-filled universe with Robertson-Walker metric and solved the equations for a particular case. Here we obtain the complete set of solutions of these equations. |

| Faculty | Dr. Shridhar Deo |
|---|---|
| Title of Research Paper | Spherically Symmetric B-D Interactions with the Gravitational Field in Presence of Perfect Fluid Distribution |
| Journal | International J of Maths science and Enggg Apples |
| ISSN No | 0973-9424 |

| Faculty | Chhaya kiran Lande |
|---|---|
| Title of Research Paper | Estimation of Seepage and Recharge induced Surface-Groundwater interaction over Sloping Terrain using Boussinesq Equation. |
| Journal | Proceedings of international conference on water cooperation and conservation for inclusive growth |
| ISSN No | 2320-5997 |
| Abstract | In this study we develop closed form analytical expression for spatial and temporal variations in water head distribution in a prototype stream aquifer system. The aquifer is in contact with constant water head at one end, and stream of varying water level is at the other end. Effect of downward infiltration are simulated by considering a time varying downwards recharge .The governing Boussineq equation is solved analytically using Laplace transform technique and the variation of the water head in the aquifer .flow rate at the stream-aquifer interaction are obtained. Numerically solutions of the non linear Boussineq equation are presented using fully explicit predictor corrector scheme to validate the efficiency of linearization. The result obtained shows the considerable changes in aquifer's water head profile mainly depends on the bed slope, rise rate of the stream level and the recharge rate. |

| Faculty | Chhaya kiran Lande |
|---|---|
| Title of Research Paper | Simulation of 2-Dimensional Subsurface Seepage Flow in an Anisotropic Porous Medium |
| Journal | Elsevier-Perspective in Science |
| ISSN No | 2213-0209 |
| Abstract | In this study, we develop new analytical solution to estimate the transient behavior of phreatic surface in an anisotropic unconfined aquifer which is overlying a leaky base and subjected to multiple recharge and withdrawal. The hydrologic setting consists of a rectangular unconfined leaky aquifer adjacent to two water bodies of constant water head along the opposite faces of the aquifer. The remaining two faces of the aquifer have no flow conditions. The flow of seepage is approximated using two-dimensional Boussinesq equation, and solved analytically using mixed finite Fourier transform. Application of the new solution is demonstrated using an illustrative example. |

| Faculty | Chhaya kiran Lande |
|---|---|
| Title of Research Paper | Unsteady Groundwater Flow over Sloping Beds: Analytical Quantification of Stream?Aquifer Interaction in Presence of Thin Vertical Clogging Layer |
| Journal | ASCE-Journal Of Hydrology |
| ISSN No | 1084-0699 |
| Abstract | In this paper, new analytical solutions are presented to quantify interaction of water between a sloping aquifer and stream of varying heads in presence of a thin vertical sedimentary layer. The initial hydrogeological setting consist of an unconfined sloping aquifer of semi-infinite extent, a fully penetrating stream of varying water level, and a vertical layer of streambank deposits that acts as an interface between stream and aquifer. Unsteady groundwater flow is characterized by a nonlinear Boussinesq equation subject to Robin boundary condition (also referred to as third kind and Cauchy boundary condition). Unlike existing results, which focus only on step changes in stream stage, the current study accounts for gradual rise and decline in stream level. A closed-form analytical solution for water head distribution, discharge rate, and net volumetric exchange of water between stream and aquifer are developed from the solution of a linearized advectiondiffusion equation. Performance of the analytical solution is compared with the numerical solution of the corresponding nonlinear Boussinesq equation using L2 and |

Tchebycheff norms. It is shown that the linearization yields acceptable solutions in many and varied situations where a stream interacts with an aquifer. The analytical solutions are presented in a manner that several other configurations, namely, zero slope,absence of vertical clogging layer, and abrupt changes in stream stage can be deduced as limiting cases of the main results. Combined effects of streambank leakance, bed slope, and stream-stage variation rate on the bank storage characteristic of the aquifer are illustrated with a numerical example.

| Faculty | Prachi R Shinde |
|---|---|
| Title of Research Paper | Genetic algorithm approach into Relay coordination |
| Journal | International Journal of Electrical Engineering & Technology |
| ISSN No | 0976-6553 |
| Abstract | The Over-Current (OC) relays are the major protection devices in a distribution system. The relays in the power system have to be coordinated so as to avoid mal-operation and hence to avoid unnecessary outage of healthy part of the system. Only if the primary Protection does not clear the fault, the back-up protection should initiate tripping. This paper presents Genetic Algorithm (GA). GA is used to find optimal value of setting of OC relay.<br>GA searches it globally. Systems with OC considered and real coded GA is used in software MATLAB. |

| Faculty | Prof. Madhura Sunil  Patel (Gad) |
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| Title of Research Paper | Optimal   Location of TCSC by Sensitivity Methods. |
| Journal | International Journal Of Computational Engineering Research(ijceronline.com) |
| ISSN No |  2250-3005(online) |
| Abstract | Due to the deregulation of the electrical market, difficulty in acquiring rights - of – way to build new transmission lines, and steady increase in power demand, maintaining power system stability becomes a difficult and very challenging problem. In a competitive power market, the system is said to be congested when the volume of transactions exceeds the transfer capability of the transmission corridor. In deregulated electricity market transmission congestion occurs when there is insufficient transmission capacity to simultaneously accommodate all constraints for transmission of a line. FACTS devices can be an alternative to reduce the flows in heavily loaded lines, resulting in increased load ability, low system loss, improved stability of the network, reduced cost of production and fulfilled contractual requirement by controlling the power flow in the network. A method to determine the optimal location of TCSC has been suggested in this paper. The approach is based on the sensitivity |

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| | of the reduction of total system reactive power loss and real power performance index. The proposed method has been demonstrated on 5-bus power systems. |

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| Faculty | Dr. Sheetal Naresh Ghorpade |
| Title of Research Paper | Dynamic Airspace Configuration Model using Swarm Intelligence based Graph Partitioning |
| Journal | Presented and Published in the Proc. 29th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE2016), Vancouver, (Canada) |
| ISSN No | 978-1-4673-8721-7 |
| Abstract | In this paper dynamic airspace configuration model based on weighted graphs is proposed. Initially weighted graph is set up to describe given airspace using its structure information and traffic data, weighted. It includes air routes, airports, way points and crossing points in which air routes is represented by edges and others as vertices of the graph. Workload metric is considered as aircraft count and balanced workload indicates equalize aircraft count among the sectors Vertices are used as sites of Voronoi diagram to divide the airspace into cells. Accordingly airspace configuration problem is described as weighted graph partitioning problem with objective as minimization of workload by proper sectorization.<br>To solve the problem, graph partitioning algorithm based multilevel method and discrete particle swarm optimization is used. Simulation results show that the sectors generated by proposed method satisfy workload balancing, minimum distance as well as connectivity constraint. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
|---|---|
| Title of Research Paper | Graph Partitioning Based Normalized Cut Methods |
| Journal | British Journal of Mathematics |
| ISSN No | 2231 - 0851 |
| Abstract | The process of image segmentation is one of the most important steps in computer vision for image retrieval, visual summary, image based modeling and in many other processes. The goal of segmentation is typically to locate certain objects of interest. In this paper, we have studied and investigated graph based normalized cut segmentation methods and proposed a technique for adding flexibility to the parameters for performance improvement. These methods are examined analytically and tested their performance for the standard images. The results obtained for the important metrics show that these methods perform better than others approaches and are computationally efficient, and useful for precise image segmentation. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
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| Title of Research Paper | Recent Trends in Metaheuristic Graph Partitioning Techniques |
| Journal | International Journal of Interdisciplinary Research and Advances in Engineering. |
| ISSN No | 0975 - 7074 |
| Abstract | Graph partitioning plays vital role in solving application problems like social network, road network, scientific simulation, air traffic control, image analysis and for many other purposes. Despite many years of research and significant contributions, graph partitioning is still a very challenging task to suit for variety of applications. Among the different partitioning approaches, metaheuristic techniques are most popular due to their capabilities of generating balanced partitioning structures. This paper in depth explains graph partitioning methods along with their detailed analysis. The study and evaluation is useful in improving the performance of existing methods as well as helpful in the development of new methods. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
|---|---|
| Title of Research Paper | Evaluation and Performance Analysis of Graph Theoretical Methods for Image Segmentation |
| Journal | Presented and Published in IEEE International Conference on Information Communication and Embedded Systems, Chennai, India. |
| ISSN No | 978 -1- 4799 – 3834 - 6 |
| Abstract | Image segmentation plays vital role in computer vision for image retrieval, visual summary, image base modeling, and for many other purposes. Despite many years of research and significant contributions, image segmentation is still a very challenging task to suit for variety of applications. Among the different segmentation approaches, graph theoretical approach is the most popular since it has capabilities of organizing the image elements into accurate mathematical structures and makes the formulation computationally efficient. This paper critically reviews recent graph based segmentation methods along with their detailed analysis, experimental performance and evaluation on the basis of Berkeley benchmark. The study and evaluation is useful in improving the performance of existing methods as well as helpful in the development of new methods. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
|---|---|
| Title of Research Paper | Image Segmentation using min – cut and swarm intelligence |
| Journal | International Journal of mathematical Sciences and Engineering Applications |
| ISSN No | 0973 - 9424 |
| Abstract | The rapid growth in the field of image processing is compelling for the performance enhancement in practical applications by processing image correctly. Image segmentation is one of the most important requirements of image processing, which is the process of partitioning an image into a set of objects and backgrounds. Segmentation plays vital role in analyzing an image automatically. The main objective of segmentation is to trace certain objects of interest by ignoring the effect of light, noise and texture on them. Among the different segmentation approaches, graph based techniques are most popular due to their capabilities of generating good segmentation structures. In this paper, we have proposed graph based discrete particle swarm optimization approach for minimal cut image segmentation. This generates better segmentation results than other methods as well as helpful in the development of new hybrid methods. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
|---|---|
| Title of Research Paper | Enhanced Graph based Normalized cut Methods for Image Segmentation |
| Journal | ICTACT Journal on Image and Video Processing (Published by Govt of India, Govt of Tamilnadu and NASSCOM) |
| ISSN No | 0976 - 9102 |
| Abstract | Image segmentation is one of the important steps in digital image processing. Several algorithms are available for segmenting the images, posing many challenges such as precise criteria and efficient computations. Most of the graph based methods used for segmentation depend on local properties of graphs without considering global impressions of image, which ultimately limits segmentation quality. In this paper, we propose an enhanced graph based normalized cut method for extracting global impression and consistencies in the image. We propose a technique to add flexibility to original recursive normalized two way cut method which was further extended to other graph based methods. The results show that the proposed technique improves segmentation quality as well as requires lesser computational time than the regular normalized cut method. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
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| Title of Research Paper | Vedic Mathematics the Cosmic Software for Fast Algorithm |
| Journal | International Journal of Computer Science and Applications |
| ISSN No | 0974 - 0767 |
| Abstract | Veda, by definition, is 'store house of knowledge'. Hence Vedic Mathematics has a much ancient origin though attributed to the techniques rediscovered between 1911, 1918. Mathematicians from across the spectrum from Hindu, Buddha and Jaina subcultures have contributed immensely to this body of knowledge. Now a day's interest in Vedic Mathematics is growing in the field of computer science where researchers are looking for a new and better approach to the subject. Even foreign researchers are said to be using this ancient technique for implementation of fast algorithms. In this survey paper, we will provide the readers an overview of the Vedic mathematics, as well as several extended work in the area. In addition, we also review several state-of-art applications that take full advantage of such simple ancient Vedic Mathematical technique. |

| Faculty | Dr. Sheetal Naresh Ghorpade |
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| Title of Research Paper | Hybrid Optimization Technique for k – Partitioning of Graphs |
| Journal | Presented and Published in National Conference on Multidisciplinary Research in Science and Engineering |
| ISSN No | |
| Abstract | In this paper we have presented hybrid algorithm using discrete particle swarm optimization technique and multilevel method for partitioning of graphs. The advantage of our algorithm is it reduces larger graphs to smaller ones for the processing and also the complex refinement process of projecting partitioned blocks back to the original size made easy due to use of DPSO. We test performance of our algorithm on ISPD98 hypergraph benchmark with respect to cut value and computational time in comparative context of hMETIS - RB, hMETIS – $k$ way. A better optimized result has been obtained by our algorithm. |