





ESTD 2001

# MODI INSTITUTE OF TECHNOLOGY

Approved By AICTE New Delhi & Affiliated to Rajasthan Technical University, Kota

## A Hallmark of Excellence in Engineering Education

# 24 Glorious Years of Legacy and Academic Excellence

*"We believe in Highly Qualified Faculties for Quality Education & Better Placements"*



COURSES

## B.Tech.

- ✓ Computer Engineering
- ✓ Electrical Engineering
- ✓ Mechanical Engineering
- ✓ Artificial Intelligence & Data Science
- ✓ Electronics & Comm. Engg.

## M.Tech.

- ✓ Digital Communication

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### CAMPUS ADDRESS:

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**Mrs. Bimla Modi**, Chairperson  
Modi Educational Group, Kota

## CHAIRMAN'S MESSAGE

*We at Modi Group of Institutions visualize our rich architecture decorated with green ambience to be placed where ideas are born, leadership is developed and new and exciting methodologies are synergized for establishing optimum learning opportunities for the Technical Graduates.*

*I believe that the newsletter will serve as a window through which the complete profile of the academic and co-curricular activities, achievements and progress made during the stipulated period can be viewed. Best wishes for the success and bright future of "MIT, Kota".*

*Chairman  
Modi Educational Group, Kota*

## VICE CHAIRMAN'S MESSAGE

*Being successful makes everyone so happy and when the success is celebrated and rewarded, it helps students to be more self-confident. "MODI INSTITUTE OF TECHNOLOGY" has made tremendous progress in all areas academic, non-academics, capacity building relevant to staff and students. I am confident that this issue of Department News Letter will send a positive signal to the staff students and the person who are interested in the technical education and Technology based activities.*



**Mr. Sushil Modi**, Vice Chairman  
Modi Educational Group, Kota

*A News Letter is like a mirror which reflects the clear picture of all sorts of activities undertaken by a department and develops writing skills among students in particular and teaching faculty in general. I express my deep sense of appreciation to Dr. Vikas Soni, Principal, MIT-Kota under whose guidance this technical work has been undertaken and completed within the stipulated time. Also, my heartfelt Congratulations to Editorial Board for their fruitful effort. With Best Wishes.*

*Vice Chairman  
Modi Educational Group, Kota*

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## DIRECTOR'S MESSAGE

*The world is changing at an accelerated rate & we as educators need to pause & reflect on the entire system of education. These factors motivate us towards a continuous process of reflection. Thus we need to forge ahead with a well balanced curriculum, facilities that nurture not only academic areas but co-curricular areas too. A mission that aims to Educate, Enlighten & Empower has proved to be successful time & again. Our mission is to provide an outstanding education and inspire our students to engage in both academic and enriching extra-curricular programs.*

*We aim at sharpening of skills and enhancement of knowledge base in our students through various extra-curricular, co-curricular and curricular activities. This is enabled through our faculty who not only keep themselves at par with the current developments but also contribute to the expansion of the body of knowledge in their field of expertise. I am sure that the students who walk into the portals of this institution would cherish the memories of their Alma Mater & step out well groomed to face the challenges of life.*

*Group Director  
Modi Educational Group, Kota*



**Sh. Raghav Modi**, Director  
Modi Educational Group, Kota

## PRINCIPAL'S MESSAGE

*MIT, Kota has set itself a Vision "Leadership in Quality Technical Education, Interdisciplinary Research & Innovation, with a Focus on Sustainable and Inclusive Technology". The evolution of the institute over the past decades has witnessed strong blend of state-of-the-art infrastructure and intricately intertwined human resource committed to provide professional education with thrust on creativity and innovation.*



**Prof. Vikas Soni**, Principal

Modi Institute of Technology, Kota

*It is a matter of great pride and satisfaction for MIT, Kota to bring out the News Letter 'MIT at a Glance'. I congratulate the Editorial Board of this News Letter who have played wonderful role in accomplishing the task in Record time. My congratulations are to the team who took the responsibility for the arduous task most effectively. I am hopeful that this small piece of technical work shall not only develop the taste for reading among students but also develop a sense belonging to the institution as well.*

*With Warm Wishes  
Principal, MIT-Kota*

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Mr. Abhishek Chattri, Dy. Registrar  
Modi Institute of Technology, Kota



Dear Readers,

*As the editor of the MIT AT A GLANCE, I am thrilled to present to you the latest edition. Our team has worked tirelessly to bring you a diverse range of articles, features, and news that reflect the dynamic and vibrant community that we are proud to be a part of.*

*This edition displays the achievements and perspectives of our faculty, and staff. It provides insightful commentary on current events and trends as a sneak peek into campus activities.*

*I hope that you find this edition both informative and engaging. Our goal is to provide a platform for the MIT community to share their voices, ideas, and experiences and to foster a sense of connection and belonging. As an Editor, I have tried my level best to include valuable article incorporating some weight full writing keeping in mind the present globalization pattern.*

*I am thankful of the Governing Body, Principal and Staff Members for helping me in bringing out magazine within the time frame.*

*It is our sincere appeal to all readers to read & enjoy and convey their suggestions to the Editorial Board so that any mistake committed in the magazine is minimized & board is able to improve the quality of the magazine in future.*

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# MODI INSTITUTE OF TECHNOLOGY, KOTA

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**Modi Institute of Technology** abbreviated as MIT was established in the year of 2001 with some relevant courses of Bachelor of Engineering/ Bachelor of Technology such as: Electronics and Communication Engineering, Computer Science & Engineering, Electrical Engineering, Applied Electronics & Instrumentation and Information Technology. Further, some new courses of B.Tech.: Electrical and Electronics Engineering and Mechanical Engineering and M.Tech.: Digital Communication have been started. Now a days, a big opportunity has come in the account of MIT, Kota that is a new Engineering branch called Artificial Intelligence and Data Science has been established with well laboratory and modern tools.

## Goals/Objectives

**Short Term Goals:** To promote a higher order thinking skill through constructive alignment among learning outcomes, learning activities and assessment. To automate academic processes in curriculum development , content delivery, assessment and evaluation.

**Mid Term Goals:** To create engineering workshops with access to modern tools, equipment and software for hands-on bearing of product and system building disciplinary knowledge and social learning. To establish an integrated curriculum.

**Long Terms Goals:** To establish engineering education departments in the college to promote engineering education, research and sustain the development activities. To fulfil the aspirations of the society and the global need for skilled technical manpower in respect of prevailing contemporary scenarios.

During the tenure of one decade, MIT has established itself on a firm footing to assure the society for its transcendence to a glorious leading national technical institute in this region of Rajasthan. **MIT** has demonstrated the evidence of perennial effort for merit and quality as it has been placing more than 100 students each year. The Institute has developed in leaps and bounds.



### Scholarships

MIT Kota provides scholarships to all the deserving students.



### Best Awarded

MIT Kota is one of the best awarded College in the field of engineering the region.



### Expert Teachers

MIT Kota have top class faculty with a wide experience in their field to deliver the best knowledge to students.



### Recruiters

MIT Kota's Career Advisory Services is a gateway to aspired career and helps students to become competent in the world of globalization.



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## Vision & Mission

**Our Vision** “The aim is to be an internationally recognized group known for excellence in professional education students’ learning and innovative research that contributes to the economic vitality & quality of life in the nation and beyond. To impart knowledge to our students in ambience with every aspect, in order to nurture them to become culturally and ethically rich professionals with bright future, the institute will manage a number of workshops, conferences, cultural, and other extra curricular activities.

**Our Mission** To contribute to the development of human resources in the form of professional engineers and managers of international excellence and competence with high motivation and dynamism, who besides serving as ideal citizens of our country will contribute substantially to the economic development and advancement in their chosen area of specialization.

### **COURSES OFFERED**

#### **B.TECH.**

- ❖ **COMPUTER SCIENCE ENGINEERING**
- ❖ **MECHANICAL ENGINEERING**
- ❖ **ELECTRICAL ENGINEERING**
- ❖ **ELECTRONICS & COMMUNICATION ENGINEERING**
- ❖ **ARTIFICIAL INTELLIGENCE & DATA SCIENCE ENGINEERING**

#### **M.TECH.**

- ❖ **DIGITAL COMMUNICATION**



# MODI INSTITUTE OF TECHNOLOGY, KOTA

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## Department of Computer Science and Engineering

### Vision

Vision To become a front runner by providing excellent education and enriching the problem-solving skills of the students with a focus to carry out research and to prepare the students for the need of industry and society.


### Mission

- M1:** To augment programs for elevating research, knowledge and implementing technologies learned by furnishing skilled and qualified faculties. (M1)
- M2:** To imbibe social awareness and responsibility in students towards societal issues. (M2)
- M3:** To enhance the employability of students through inclusion of industry relevant courses. (M3)
- M4:** To promote organizational and leadership skills in students through extra- curricular and co-curricular events. (M4).

“

"I can positively say MIT has made me a better person. It has helped me develop a positive attitude towards my studies and discover more about myself. Teachers are very caring and interested in students' well-being. They make sure every class is fun, educational, or interactive. Thanks, MIT"

< >

 **Ayushi Mitta**  
Company : CPWC India  
Batch : 2017

“

"Teachers at MIT Kota work closely with their students, which allows them to really understand the strengths and difficulties of each individual. This means you get more support and encouragement in the areas that really matter."

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 **Mohit Goyal**  
Company : Ciena India Pvt Ltd.  
Batch : 2006

“

MIT Kota is a place where you can find an amalgamation of learning. I feel great studying at MIT as it gives great opportunity as well as support from faculties and placement officers. Getting placed in Qualcomm is an achievement for me for which I would like to thank MIT Kota.

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 **Gaurav Gagrani**  
Company : Qualcomm  
Batch : 2005



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## Department of Electrical Engineering

### Vision

To emerge as a leading Department of Electrical Engineering that caters to the latest needs of power sector, electrical & allied industry in the region.

### Mission

To evolve as an innovative and globally competent Electrical Engineering Department that contributes to the socio-economic growth of region by utilizing the advancement in Electrical Engineering by providing conducive learning and interactive environment to students and faculty.





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## Department of Electronics and Communication Engineering

### Vision

To be in a position of an enhanced national and international reputation as a department offering excellent educational programmes and undertaking internationally recognized research and development activities in electronics and communication engineering

### Mission

1. Continued focus on excellence in teaching and learning by investing in faculty and staff development and resources.
2. Promoting an all-round development of our students through curricular and co-curricular activities that instill a spirit of social responsibility, innovation, creativity and entrepreneurship.
3. To train the Electronics & Communication Engineering graduates to meet future global challenges by inculcating a quest for modern technologies in the emerging areas.
4. Promoting high-quality research leading to publications in reputed journals and patents.
5. To create centers of excellence in the field of Electronics and Communication Engineering with industrial and university collaborations.
6. Encouragement a learning and work environment that makes the department one of the best ECE communities for students, faculty, and staff.



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## **Department of Mechanical Engineering**

### **Vision**

To be in a position of an enhanced national and international reputation as a department offering excellent educational programmes and undertaking internationally recognized research and development activities in electronics and communication engineering

### **Mission**

1. Continued focus on excellence in teaching and learning by investing in faculty and staff development and resources.
2. Promoting an all-round development of our students through curricular and co-curricular activities that instil a spirit of social responsibility, innovation, creativity and entrepreneurship.
3. To train the Electronics & Communication Engineering graduates to meet future global challenges by inculcating a quest for modern technologies in the emerging areas.
4. Promoting high-quality research leading to publications in reputed journals and patents.
5. To create centres of excellence in the field of Electronics and Communication Engineering with industrial and university collaborations.
6. Encouragement a learning and work environment that makes the department one of the best ECE communities for students, faculty, and staff.



# MODI INSTITUTE OF TECHNOLOGY, KOTA

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## Department of Artificial Intelligence and Data Science

### Vision

To build an ecosystem to contribute to society by producing leaders in Artificial Intelligence and Data Science through education and research.

### Mission

1. M1: Train the students in the state-of-the-art technologies of AI&DS.
2. M2: Sensitize students to solve societal issues through AI techniques by inculcating values and ethics.
3. M3: Enhance employability and entrepreneurial skills in the field of AI & DS through experiential and self-directed learning.
4. M4: Foster research aptitude among the students through project-based learning.



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**Research Publication 2023-24**

## **A SECURE MECHANISM FOR PREVENTION OF VISHING ATTACK IN NFC BASED SMART PARKING.**

Abhishek Chattri, Pankaj Jain, Ritesh Chabda.

International Journal of Research and Analytical Reviews.

Volume: 11, Issue: 2, 2024

The rise of the Internet of Things has led to the increasing popularity of smart cities. By utilizing IoT technology, urban infrastructure can be optimized to enhance productivity and reliability. This includes tackling issues like traffic congestion, inadequate car parking facilities, and road safety. In this research, we introduce A Secure Mechanism for Prevention of Vishing Attack in Smart Parking using NFC technology for payment and ID recognition.

The exceptional growth of mobile applications has driven their usage in payments. However, ongoing mobile payments and commerce research is susceptible to Malware Analysis, Firmware Analysis, Intellectual Property Theft, Protocol Analysis, Reversing Mobile Apps, Cryptographic Key Extraction security theft and lacks Internet Protocol Security, Kerberos, Internet Key Exchange protection, thus failing to provide security. Hence, these types of attacks on financial transactions via mobile wallets or digital wallets using different application can lead to severe financial losses. To overcome these problems, we propose a secure advance a secure structured environment and reusable protocol using cryptographic protocol analysis logic of Gong, Needham and Yahalom (GNY) for Near Field Communication (NFC)-based digital payment through mobile applications.



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## Research Publication 2023-24

We have proposed the Key Encrypted Secured Protocol (KESP) for smooth and successfully verified mobile app-based wireless payment environment using GNY logic and the SCYTHAR tool. Suggested protocol will overcome/minimize the attacks by Malware Analysis, Firmware Analysis, Intellectual Property Theft, Protocol Analysis and provide an advance solution in Internet Protocol Security, Kerberos, Internet Key Exchange protection problems. Our proposed protocol maximizes the security level and reduced the risk of false practices payments.

## **A REVIEW STUDY ON THE ENTERPRISE INFORMATION PORTAL (EIP).**

Sunita Soni, Seema Arya.

International Journal of Novel Research and Development.

Volume: 9, Issue: 5, 2024

A web-based platform known as an enterprise information portal (EIP) gives customers, partners, and staff members a single point of access to data and services. An Enterprise Information Portal (EIP) is a browser-based system that provides access to the business information in the same method that content portals like Yahoo the gateway to content on the Web. Enterprise information portals are applications that enable companies allow access to internally and externally stored information, and provide external users to access information needed to make informed business decisions.



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**Research Publication 2023-24**

## **THE DESIGN AND CONSTRUCTION OF A WIND TURBINE WITH VERTICAL AXIS.**

Himanshu Khandelwal, Neelabh Gupta, Dr. Barkha Gupta.

International Journal of Innovative Research in Science Engineering and Technology.

Volume: 13, Issue: 5, 2024

Vertical axis wind turbine are sought after because the average wind velocity in urban areas is insufficient to operate horizontal axis wind turbines. The two types of vertical axis wind turbines are darrieus and savonius. The comparison of the savonius and darrieus type of vertical axis wind turbines coefficient of performance is the main objective of the current investigation. ANSYS Fluent—Computational Fluid Dynamics (CFD) software—is used to numerically analyze the aforementioned VAWTs. Both turbines have blade designs that are optimized to produce the highest output given the available input. The wind turbines' output parameters are obtained individually and compared for the same input parameters. This comparison offers a foundation for selecting the appropriate VAWT type based on the function.

**Keywords:** - Vertical Axis Wind Turbine, Ansys Fluent, CFD



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## Research Publication 2023-24

### **A REVIEW OF RELIABILITY ANALYSIS AND MAINTENANCE BY THE APPLICATION OF NEURAL NETWORK.**

Neelabh Gupta, Dr. Barkha Gupta, Himanshu Khandelwal.

13th International Conference on Interdisciplinary Research for Sustainable Development  
2024.

Volume: 1, Issue: 1, 2024

This paper audits diverse methods of upkeep, manufactured neural systems (ANN) and their different applications in blame chance evaluation and an early blame location analysis. ANN offer a capable instrument to assess machine information and parameters which can learn from handle information of blame re-enactment. The prescient support is in centre of production facilities providing in long provider chains of automotive industry to guarantee the reliability and nonstop generation and on-time conveyances. At last there are looked into cases of utilization of ANN in particular prescient support cases.

### **SYNERGY ASPECTS OF WIMAX AND DSL ACCESS TECHNOLOGIES.**

Jitendra Yadvendra, Mukesh Chaudhary, Ashish Sharma.

International Journal Of Research and Analytical Reviews.

Volume: 11, Issue: 2, 2024

WiMAX is a relatively new access technology which aims to offer high data throughput over the air, and allow delivery of broadband multimedia services to fixed as well as mobile users. The WiMAX architecture relies on the 'all-IP' model. DSL on the other hand is a time tested technology for provisioning of



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## Research Publication 2023-24

broadband services on wired line connection. In a way the two technologies WiMAX and DSL are complimentary and their integration would be particularly useful to the operators operating in these two domains.

### **ROBUSTNESS ANALYSIS FOR HYGWO-PS OPTIMIZED FOPID-CONTROLLERS IN AGC OF INTERCONNECTED HYDRO-THERMAL POWER SYSTEM.**

Shailaja Yogesh Kanawade, Vikas Soni.

International Journal of Intelligent Systems and Applications in Engineering, An Scopus Indexed Journal.

Volume: 12, Issue: 21, 2024

It has already been found in the literature that the hybrid grey wolf optimization- pattern search (hyGWO-PS) tuned fractional order PID (FOPID)-controllers in three area interconnected hydro thermal power system (TAIHTPS) with nonlinearities, multiple tie lines and reheat turbines has produced the far better performance than some recent published approaches. In that study, the settling times and overshoots of frequency & tie line power deviations and ITAE values were obtained by proposed approach called hyGWO-PS/FOPID under the nominal condition and are evaluated as: Settling time of  $\Delta f_1 = 8.50s$ ; Settling time of  $\Delta f_2 = 8.50s$ ; Settling time of  $\Delta f_3 = 8.10s$ ; Settling time of  $\Delta P_{Tie12} = 19.31s$ ; Settling time of  $\Delta P_{Tie23} = 15.23s$ ; Settling time of  $\Delta P_{Tie31} = 13.01s$ ; ITAE=1.1243. In this regard, it has become necessary to study the variation in the performance of TAIHTPS consisting of hyGWO-PS optimized FOPID-controllers with parametric variations, i.e. with varying load



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## Research Publication 2023-24

conditions and system parameters (TG, TT, TR, TWand T12). In the present work, the robustness analysis or the sensitivity analysis of hyGWO-PS optimized FOPID-controllers under parametric variations for AGC of same interconnected power system has been carried out.

The robustness analysis shows that the behaviour or the system dynamic responses of TAIHTPS consisting of hyGWO-PS optimized FOPID-controllers hardly alters under the variations in operating load conditions and system parameters over the range [-50%, +50%], i.e. hyGWO-PS optimized FOPID is far better robust for the same.

## APPLICATION OF STBC IN MIMO-OFDM BROADBAND WIRELESS COMMUNICATIONS.

Rajat Gupta, 1 , Vikas Soni<sup>2</sup>.

International Journal of Wireless Communications and Networking Technologies.

Volume: 13, Issue: 3, 2024

The Space Time Block Coding (STBC) is applied in multiple transmit antennas using data transfer for fading channels. After being encoded, the data is broken into n streams of continuously broadcast strings over n transmit antennas using STBC. The received signal is the combination of n broadcast signals and it becomes erroneous due to the entry of noise at receiver end. The probabilistic decoding approach is applied instead of joint detection approach for recovering data via decoupling of signals delivered from various antennas. The maximum likelihood decoding scheme employs the orthogonal structure of STBC called as



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## Research Publication 2023-24

OSTBC (Orthogonal Space Time Block Code) for providing the maximum likelihood decoding algorithm depending upon linear computation at receiver. In the present work, a MATLAB/SIMULINK environment of OSTBC has been used in order to acquire the highest dimension of variability for specific number of broadcasts as well as receive antennas utilizing a simple decoding techniques. With or without Grey Coding, OSTBC / STBC is used in MATLAB / SIMULINK blocs. The OSTBC algorithm calculates the highest achievable transmission rate for every amount of transmit antennas in any constellations including M-PSK array. M-PSK STBCs are used for different complex constellations to achieve  $\frac{1}{2}$  as well as  $\frac{3}{4}$  of highest allowable transmission rate for Multiple Input Multiple Output.

### **6G - A STUDY OF WIRELESS NETWORK.**

Pawan Gupta, Amit Shringi

International Research Journal of Engineering and Technology.

Volume: 11, Issue: 5, 2024

Transmission of data between two or more points without physical connections is called wireless data transmission. Wireless mobile communication has been around for several years, but the demand for mobile devices is constantly increasing. As a result, new integrated versions of networks are released regularly. These networks can span short distances, such as for remote control of television, or even long distances, such as deep space radio communication. The latest version is 5G, although it is currently only used in a few countries. The 5G network is a robust and highly efficient wireless network that meets most user requirements.



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## Research Publication 2023-24

However, this does not mean the end of technological pursuits. This study looks at the development of technologies, their benefits and how they meet the needs of users. The 6G concept of the next generation of mobile communication networks will also be presented. The article discusses the development and growth of both 6G and 7G, paving the way to the future.

### **A COMPHRENSIVE REVIEW OF CLUSTERING TECHNIQUES IN WIRELESS SENSOR NETWORKS.**

Nayana Sharma.

International Journal of Research and Analytical Reviews.

Volume: 11, Issue: 2, 2024

WSNs are emerging as a crucial sector within the IT landscape, attracting significant research attention spanning system design, networking, distributed algorithms, programming models, data management, security, and social aspects. Their popularity is swiftly growing due to their potential as cost-effective solutions. At their core, WSNs involve deploying small sensing devices across specific geographical areas for tasks like target tracking, surveillance, and environmental monitoring. These compact devices are adept at sensing various parameters and communicating with other units. Given the wireless nature of the network, communication between nodes occurs wirelessly. Integration with the external world is facilitated through a gateway or controlling server. This paper aims to provide an in-depth exploration of diverse clustering methodologies employed in WSNs.



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Research Publication 2023-24

## NOVEL HYBRID PARKING AUTOMATION SYSTEM.

<sup>1</sup>Krishan Kumar Soni, Kesari Singh, Pankaj Jain

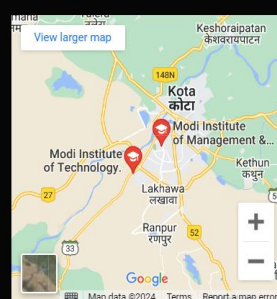
International Journal of Research and Analytical Reviews.

Volume: 11, Issue: 2, 2024

This article introduces a novel parking automation system that combines Visible Light Communication (VLC) and Radio Frequency (RF) wireless technologies to enhance communication between vehicles and infrastructure (V2I) as well as infrastructure and vehicles (I2V). Additionally, it improves indoor localization and wireless mesh networking. The main objective of this system is to enhance the efficiency and security of parking operations by utilizing advanced communication and localization techniques.



### Location



### Contacts

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Modi Institute of Technology was founded in the year 2001 to offer B.Tech. degree courses in the most relevant areas of technology viz.



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## Patent Publication 2023-24

S.No.	Name of Inventor	Title of Invention	Application No.	Field	Publication or Grant Year
1	Mrs. Shailaja Yogesh Knawade & Dr. Vikas Soni	Optimized Automatic Generation Control in Interconnected Thermal Power Plants: A Hybrid hGWO-PS Approach for Dissimilar Fractional Order 2DOF-PID Controllers	202341077309	Electrical	Published in 2023  Intellectual Property Right.  The Patent act 1970 (39 of 1970) and the Patent rule 2003
2	Dr. Vikas Soni & Rajat Gupta	RFID based Unmanned Petrol Pump with Fire Security	202341077117	Electronics	Published in 2023  Intellectual Property Right.  The Patent act 1970 (39 of 1970) and the Patent rule 2003
3	Dr. Vikas Soni & Rajat Gupta	A devised single-snapshot direction-of-arrival system for a uniform circular array to resolve multiple targets	ZA2023/00652A	Electronics	Granted in 2023.  Patent: Republic of South Africa, Section 44(1) of Patent Act No. 57, 1978.



**ROHIT BALWANI-CS**  
TCS



**KRITI SINGH-CS**  
Allen



**NISHITA KUMARI-CS**  
Infosys



**KIRTI HADA-EE**  
Flipkart



**DEVANSH GALAV-CS**  
Cognizant



**CHETAN SHARMA-EEE**  
Asian Paint



**YASH RATHORE-ME**  
HPLC



**UZMA ZABI-ME**  
Hero Moto Corp



**RAVI SHARMA-ME**  
CFCL



**ANSHUL MISHRA-CS**  
Loopanda Solutions Pvt. Ltd



**AKHIL PORWAL-CS**  
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**MOHD. ARSLAN-CS**  
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