



Sandip Foundation's

Sandip Institute of Engineering and Management, Nasik

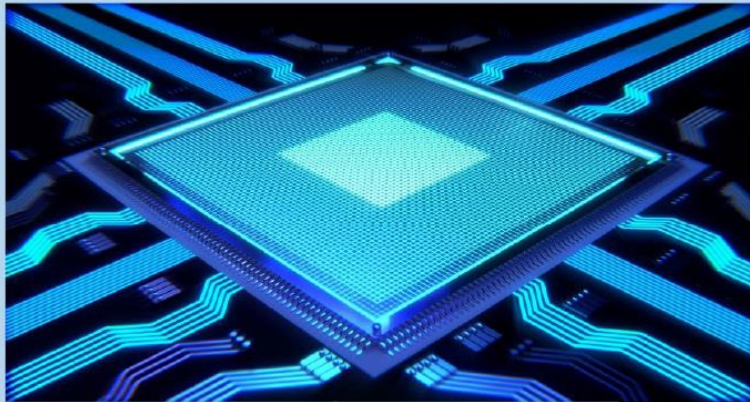


SANDIP
FOUNDATION

DEPARTMENT OF COMPUTER ENGINEERING

Presents

E-Insights



Volume 5

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About SIEM



Sandip Institute of Engineering and Management (SIEM) is located in the scenic, eco-friendly and conducive-to-study campus at an elevation off the Trimbak Road (Mahiravani, Nasik) leading to one of the twelve renowned pilgrimages of jyotirlingas known as Trimbakeshwar (abode of Lord Shiva) at the foot hills of Brahmagiri mountain ranges. SIEM is approved by All India Council for Technical Education, New Delhi Government of India and affiliated to Savitribai Phule University of Pune. SIEM is committed to imparting quality education in an atmosphere that will ensure that its students are confident, self-motivated and industry-ready. Towards this goal, we are giving importance to qualified and experienced faculty for effective teaching-learning process, equipping our laboratories with best-in-class machines and instrument and developing overall personality of our students (with emphasis on strengthening the fundamentals of subjects, ability to work as a team and good communication skill). There is a well formulated regime with a blend of theoretical learning and practical experience. This enables the faculty to guide the students to learn tomorrow, today.

Sandip Foundation's

Sandip Institute of Engineering and Management, Nasik.

Department of Computer Engineering



January, 2024

E-Insights

Volume 5: Issue 2

About Department

Computer Engineering

The Department of Computer Engineering sustains and strengthens its teaching and learning program by adapting a comprehensive student centric approach designed to add significant value to the learner in an integrated manner through conceptual and interactive teaching, active lab sessions, seminars, projects, and independent study. As the continued up gradation of the knowledge and skills of faculty members is vital for continuous growth and development of the department, faculties are motivated to attend workshops, seminars, conferences and Training programs. Department has well equipped state-of-the-art laboratories with latest hardware and software configuration for conducting various practical's as well as highly qualified and experienced faculty to nurture the future technocrats of the nation.

Editor-in-chief

Mr.Nilesh B.Madke

Editor

Mr.Nikhil Singh Jodha

Ms.Khushi Solanki

Vision and Mission of Institute

Vision of the Institute

We at SIEM aspire to be a globally recognized Institute that delivers a world class education to outstanding intellectuals by nurturinc and grooming their interests, creative abilities and thrusts to acquire a life-long learning so as to imbibe values of their commitmen1 towards society.

Mission of the Institute

We at SIEM shall strive continuously,

- To inculcate and imbibe knowledge of cutting-edge technologies and its implementation for solving real life problems in E conducive environment.
- To collaborate with national and international institutes/industries/universities of repute for sustainable growth through tearr work.
- To motivate and retain highly skilled and knowledgeable individuals, whose creativity and interest in teaching upholds to achieve desired goals. • To provide a dedicated platform to cater the needs of individuals and inspire them for their intellectual growth and character building.
- To enable the students to achieve excellence in the chosen fields and to share the responsibilities of citizenship and service in E disciplined manner.

Vision and Mission of Department

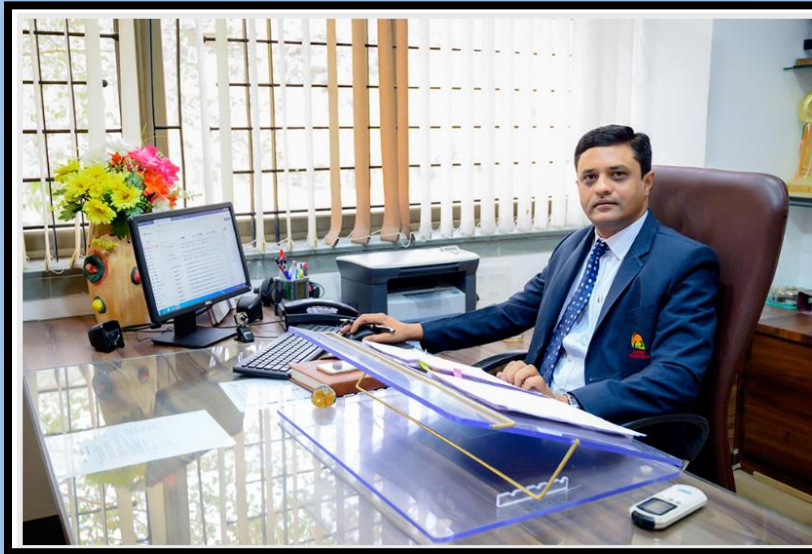
Vision of the Department

The department aims to be recognised in the field of quality education through excellence in teaching, learning, research and innovation for the betterment of society.

Mission of the Department

- To provide world class infrastructure with modern tools and technologies for better learning ambiance.
- To enhance problem-solving skills approaches by encouraging young and inspiring minds with innovative teaching & learning.
- To build competent professionals and entrepreneurs through collaborative learning with national and international institutes of repute.
- To contribute in the development of society & nation at large through excellence in research and innovation.

Golden Words from Principal



Welcome to Sandip Foundation's Sandip Institute of Engineering and Management.

Representing Sandip Institute of Engineering and Management is a

great matter of pride for me. In this marvelous campus of Sandip Foundation, we strive to inculcate values in students which nurture them in a way that makes them excel in academics, innovation and personal growth. The prime interest of the institute has always been to impart knowledge, values, skills and wisdom in students to empower them to become the torch bearers of their respective fields.

We support an all-encompassing approach to education that integrates academic concepts with real-world applications. We pledge to deliver each and every stakeholder top-notch facilities and services. In order to integrate academic understanding to real-world problems and applications, our laboratories and research facilities provide students with hands-on learning opportunities.

We encourage our students to engage in extracurricular and intellectual activities as a supplement to their academic endeavors.

These experiences aid in the development of critical life skills, the enhancement of communication abilities, and the formation of enduring connections that will last a lifetime. The institutes additionally offer employability-enhancement programs, value-added programs, and credentials in addition to the primary academic curriculum. Furthermore, we furnish webinars, seminars, guest lectures, workshops, and skill-based training modules for advancing the level of bar of the knowledge of students' field of interest.

In my ability and as this prestigious institution's principal, I can confidently assure you that we are dedicated to creating an orderly and enriching campus environment. To ascertain everyone's success both academically and personally, we place a high priority on their well-being and provide the best assistance whenever required.

Let's change the world together and leave an enduring impression of being an integral part of the Sandip Group of Institutes.

Thank You. Best Regards.
Dr. Dipak P. Patil Principal

Valuable Words from Head of the Department

Greeting from the Department of Computer Engineering!!

The world is going through a tremendous positive transformation, and in education its effects are clearly visible. We in the Department of Computer Engineering wish to be part of this positive change utilizing our core strengths in Technical knowledge, Research, Data Analytics and world class Infrastructure. Department of Computer Engineering was established in the year 2010 with Batchelor of Computer Engineering (BE) Programme with Intake of 60. Being an integral part of an institution, Sandip Institute of Engineering and Management, Sandip Foundation, Nasik, naturally helps the department and its programmes imbibe all the values and ethos that have made the institute an epitome of excellence.

The rigorous education and training which students get, helps them to tackle the complexity of the engineering and corporate environment as they are able to unshackle themselves from the confines of mere technical competencies. With a carefully designed syllabus by SPPU, we keep up to the true Sandip Foundation tradition of sensitizing ourselves with the latest trends in the industry. The emphasis of the training, Value added Programs in the Department is on building technical as well as people skills, which is indispensable for each of our students to do well in their life.



The class being a heterogeneous mix of academically motivated students from diverse, yet related fields naturally enriches the learning environment, turning it into a fountainhead of vibrant ideas.

The response from both academic institutes as well as industry has been very enthusiastic and encouraging. This bears testimony to the fact that our alumni have made us proud by assuming various positions in reputed organizations like Persistent, Accenture, Amazon, Synel and many more. The placement of the students has been equally encouraging as they have joined many reputed organizations like Infosys, Persistent, Amazon, TCS, Accenture, etc

All these achievements of the department would not have been possible without the enthusiastic and dedicated work of our past and present faculty members. Department faculty members are exceptionally dedicated set of teachers and at the same time top notch researchers in their field of study publishing on regular intervals in reputed journals. They have also done the department extremely proud by writing various books, book chapters etc. Department has also been in the fore front of industry interaction.

We are supremely confident that in years to come Department with its rigorous and regularly updated syllabus, research, innovative teaching techniques and active participation with industry will enforce the reputation of as an enviable seat of higher learning.

Dr. K. A. Shirsath (Nalavade)
Head, Department of Computer Engineering
Sandip Institute of Engineering and Management, Nasik

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01. The Future of Autonomous Vehicles.

Autonomous vehicles (AVs), or self-driving cars, are designed to navigate and operate without human intervention. They utilize a combination of sensors, cameras, artificial intelligence, and machine learning to perceive their environment and make driving decisions. The future of autonomous vehicles holds the potential for significant changes in transportation, urban planning, and society.

Historical Context

Early Concepts and Research (1920s-1980s):

First Ideas: The concept of self-driving cars can be traced back to the 1920s when experiments with radio-controlled cars began.

Early Prototypes: In the 1970s and 1980s, research institutions and automakers started developing prototypes, such as the "Stanford Cart," which could navigate simple environments using cameras and sensors.

Emergence of Advanced Technologies (1990s):

DARPA Challenge: The U.S. Defense Advanced Research Projects Agency (DARPA) held competitions in the early 2000s to advance autonomous vehicle technology, pushing the boundaries of what was possible.

Autonomous Navigation: Projects like Carnegie Mellon University's Navlab demonstrated vehicles capable of navigating complex environments, using algorithms for decision-making.

Commercial Development (2010s):

Google's Waymo: In 2009, Google started its self-driving car project, which later became Waymo. This marked a significant push toward developing commercial AVs, focusing on extensive real-world testing.

Regulatory and Safety Considerations: As AV technology advanced, regulators began to explore safety standards and legal frameworks for testing and deploying autonomous vehicles on public roads.

Testing and Trials (2015-2020):

Pilot Programs: Major automakers, tech companies, and startups began launching pilot programs and partnerships to test AVs in urban environments. Companies like Uber and Tesla introduced features like Autopilot, showcasing the potential of semi-autonomous driving.

Public Perception: Public interest and concern grew, leading to discussions about safety, ethics, and the implications of AV technology on jobs and infrastructure.

Advancements and Challenges (2020s):

Increased Investment: Investment in AV technology surged, with companies like Waymo, Tesla, and Cruise advancing their systems, while traditional automakers developed their own autonomous solutions.

Regulatory Frameworks: Governments around the world began creating regulations to ensure safe testing and integration of AVs into existing transportation systems.

Technical Challenges: Issues such as perception in adverse weather, navigating complex urban environments, and ensuring cyber security remained key hurdles.

Current Trends and Future Outlook:

Integration with Public Transportation: Future AVs are expected to complement public transportation systems, reducing congestion and improving accessibility.

Environmental Impact: Autonomous electric vehicles (AEVs) can significantly reduce emissions and reliance on fossil fuels, aligning with sustainability goals.

Urban Planning: The widespread adoption of AVs could reshape urban infrastructure, reducing the need for parking spaces and changing how cities are designed.

Ethical and Social Considerations: Ongoing discussions about the ethical implications of AVs, such as decision-making in accident scenarios and the impact on jobs in driving professions, will shape the future landscape.

Areas of Focus in the Future of Autonomous Vehicles

Safety and Reliability: Continued advancements in sensor technology, AI, and machine learning are crucial for improving the safety and reliability of AVs.

Regulatory Frameworks: Developing clear guidelines and regulations will be essential for the safe deployment and integration of AVs into existing transportation systems.

Infrastructure Adaptation: Smart infrastructure, including traffic signals and road signs that communicate with AVs, will be necessary to enhance their functionality.

Public Acceptance: Building public trust through transparency, safety demonstrations, and education will be critical for the widespread adoption of AV technology.

Cyber security:

Ensuring robust cyber security measures to protect AV systems from hacking and unauthorized access is vital for safety and public confidence.

Economic Implications: Understanding the economic impacts of AVs, including job displacement in driving professions and changes in urban mobility, will be important for policymakers and businesses.

Conclusion

The future of autonomous vehicles promises to revolutionize transportation, with significant implications for safety, urban planning, and environmental sustainability. As technology continues to evolve and societal acceptance grows, AVs have the potential to transform how we move and interact with our surroundings.

02. Cyber security in the Age of Remote Work: Overview and History.

Cyber security in the age of remote work focuses on protecting organizational data, networks, and systems in a landscape where employees operate outside traditional office environments. The shift to remote work has introduced new vulnerabilities, making robust cyber security practices essential for businesses.



Historical Context

Pre-Remote Work Era (1980s-2010s):

Traditional Security Models: Cyber security practices were primarily designed for on-premises environments, focusing on protecting physical networks within corporate offices.

Emergence of the Internet: As internet usage grew, so did cyber threats, leading organizations to invest in firewalls, antivirus software, and intrusion detection systems.

Advent of Remote Work Tools (2000s):

VPNs and Remote Access: Virtual Private Networks (VPNs) became popular, allowing employees to securely connect to corporate networks from remote locations.

Collaboration Tools: Early tools like email and file-sharing services laid the groundwork for remote collaboration, but security often lagged behind functionality.

Rise of Cloud Computing (2010s):

Cloud Services Adoption: As businesses began migrating to cloud services for storage and applications, new cyber security challenges emerged, particularly around data access and compliance.

Increased Cyber Threats: The rise of cyber-attacks, including ransom ware and phishing, prompted organizations to reassess their security measures.

Pandemic-Driven Remote Work (2020):

Sudden Shift: The COVID-19 pandemic forced organizations to transition to remote work almost overnight. Many lacked the infrastructure to support this shift securely.

Increased Vulnerabilities: The rapid adoption of remote work led to a surge in cyber attacks. Hackers exploited unpatched software, unsecured home networks, and employees' lack of security awareness.

Evolving Cyber security Strategies (2020s):

Zero Trust Security Model: Organizations began adopting the Zero Trust model, which assumes that threats can exist both inside and outside the network. This approach emphasizes strict verification for all users and devices.

Enhanced Employee Training: Companies started investing in cybersecurity training programs to raise awareness about phishing attacks, password hygiene, and secure remote work practices.

Current Challenges and Future Outlook:

Hybrid Work Environments: As organizations adopt hybrid models, where some employees work remotely and others in the office, maintaining security across diverse environments presents new challenges.

Advanced Threats: Cyber threats continue to evolve, with increased sophistication in attacks, such as advanced persistent threats (APTs) and supply chain attacks.

Regulatory Compliance: As data privacy laws tighten globally, organizations must navigate compliance while ensuring robust cyber security practices.

Key Areas of Focus in Cyber security for Remote Work

Secure Remote Access: Implementing secure VPNs, multi-factor authentication (MFA), and access controls to protect data when employees connect remotely.

Endpoint Security: Ensuring that devices used for remote work—laptops, smartphones, tablets—are secured against malware and unauthorized access.

Data Encryption: Encrypting sensitive data both at rest and in transit to prevent unauthorized access and breaches.

Threat Detection and Response: Utilizing advanced threat detection tools and incident response plans to identify and mitigate attacks swiftly.

User Awareness Training: Providing ongoing training for employees to recognize phishing scams, social engineering tactics, and other cyber threats.

Regular Software Updates: Ensuring that all software and operating systems are up to date to protect against known vulnerabilities.



Conclusion

Cyber security in the age of remote work has transformed significantly, driven by technological advancements and a rapidly changing work environment. As organizations continue to

navigate the complexities of remote and hybrid work, prioritizing cyber security will be crucial in safeguarding sensitive data and maintaining business continuity.

03. Embracing Low-Code Platforms: Revolutionizing Software Development.

Introduction

In the ever-evolving world of technology, low-code platforms have emerged as a game-changer in software development. By simplifying the coding process and enabling rapid application development, low-code platforms are democratizing the creation of software and empowering both technical and non-technical users to build solutions. This article explores the concept of low-code development, its benefits, key applications, and future prospects.

What is Low-Code Development?

Low-code development refers to a visual approach to software development that requires minimal hand-coding. Instead of writing extensive code, users employ graphical user interfaces (GUIs) and drag-and-drop tools to design and build applications. These platforms provide pre-built components and



templates that facilitate the rapid creation of applications with minimal programming knowledge.

Benefits of Low-Code Platforms

- 1. Accelerated Development:** Low-code platforms significantly reduce the time required to develop applications. By using visual development tools and pre-built templates, developers can quickly assemble and deploy applications, accelerating time-to-market and enabling faster responses to business needs.
- 2. Increased Accessibility:** Low-code platforms make application development more accessible to non-technical users, such as business analysts and domain experts. This democratization of development allows individuals with limited coding experience to contribute to the creation of solutions, fostering innovation and collaboration.
- 3. Cost Efficiency:** With reduced development time and the ability to leverage existing components, low-code platforms can lower the cost of application development. Organizations can achieve more with fewer resources, making it a cost-effective solution for both small businesses and large enterprises.
- 4. Enhanced Agility:** Low-code platforms support iterative development and rapid prototyping, enabling organizations to quickly adapt to changing requirements and market conditions. This agility is crucial in today's fast-paced business environment, where the ability to pivot and respond to new opportunities can provide a competitive advantage.

Key Applications of Low-Code Platforms

- 1. Business Process Automation:** Low-code platforms are widely used to automate business processes, such as workflow management, customer relationship management (CRM), and human resources (HR) operations. By streamlining and automating repetitive tasks, organizations can improve efficiency and reduce manual errors.
- 2. Custom Applications:** Organizations use low-code platforms to develop custom applications tailored to their specific needs. Whether it's a project management tool, inventory management system, or internal collaboration app, low-code platforms provide the flexibility to build solutions that align with business objectives.
- 3. Mobile App Development:** Low-code platforms enable the creation of mobile applications with minimal coding. Users can design and deploy apps for iOS and Android using intuitive visual tools, making it easier to reach mobile users and deliver responsive experiences.
- 4. Integration Solutions:** Low-code platforms facilitate the integration of disparate systems and data sources. By providing pre-built connectors and integration tools, these platforms enable seamless data exchange and workflow automation across different applications and systems.

Challenges and Considerations

1. **Limited Customization:** While low-code platforms offer a range of pre-built components, they may have limitations in terms of customization. Complex or highly specialized requirements might necessitate additional coding or integration with traditional development tools.
2. **Scalability:** As applications developed on low-code platforms grow in complexity and user base, scalability can become a concern. It's essential to evaluate whether the platform can handle increased demand and performance requirements.
3. **Security and Compliance:** Ensuring the security and compliance of applications built on low-code platforms is crucial. Organizations must assess the platform's security features, such as data encryption and access controls, and ensure that applications meet industry regulations and standards.
4. **Vendor Lock-In:** Organizations should be mindful of potential vendor lock-in with low-code platforms. Switching platforms or migrating applications can be challenging, so it's important to consider the long-term implications and flexibility of the chosen solution.

Future Prospects

The future of low-code development looks promising as technology continues to advance. Emerging trends include the integration of artificial intelligence (AI) and machine learning (ML) into low-code platforms, further enhancing automation and data analysis capabilities. Additionally, the rise of no-code platforms—designed for even greater ease of use—will likely complement and expand the possibilities of low-code development.

Conclusion

Low-code platforms are transforming the landscape of software development by enabling faster, more accessible, and cost-effective application creation.

With their ability to accelerate development, empower non-technical users, and support a wide range of applications, low-code platforms are



shaping the future of technology. As organizations and individuals embrace these tools, they unlock new opportunities for innovation, efficiency, and collaboration in an increasingly digital world.

04. Report on Avishkar



Congratulations Ms.Srushtee Kolhe for participating and holding her position among Top 12 of Research category projects in 16th Maharashtra State InterUniversity Research Convention AVISHKAR 2023-24 at MUHS, Nashik held on January 12-15, 2024

Great achievements!!

Congratulations Team 'Ecoyantra'

SIEM, Nashik proudly announce that Ms Srushtee Kolhe, Final Year student of Computer Engineering department has successfully participated in 16th Avishkar 202324: Maharashtra State Inter-University Research Convention hosted by MUHS, Nashik on January 12-15, 2024. It has our immense pleasure to state that her Research project titled- 'Ecoyantra: E-waste Management Facility Locator' under the super guidance of Dr Kamini Nalavade, HOD, Dept. of Computer Engineering in the category of Commerce, Management and Law, UG Level got shortlisted for zonal level and ranked in Top 12 Research Projects in all projects presented in Avishkar 2023-24.



Team 'Ecoyantra' participated in Inter College Level competition at RYK college, Nashik on 30th October 2023 and got selected for 2nd round of Zonal level competition held at SPPU, Pune on 20th December, 2023. The team got shortlisted for State Level Inter-University competition held at MUHS, Nashik during January 12-15, 2024 where more than 700 research project groups were presented by 24 various universities. The team presented their research project on 14th January 2024 at MUHS, Nashik through poster and model presentation and got ranked in Top 12 position.



05. Event Report on Seminar

1. **Event Title:** Seminar on “Opportunities and process of Higher Studies at Abroad”.
2. **Event Date:** 06/03/2024
3. **Event Conduction Duration:** 1 day (Timings: 11 am to 12 pm)
4. **Event Venue:** SE Classroom
5. **Event Resource Person Details:** Experts from Cranberry Overseas
6. **Name of Event Coordinator:** Prof. M V Korade
7. **Expected Audience:** Students of SE, TE, BE Computer Engineering Department.
8. **Number of Participants:** 69
9. **Seminar Content:**
 - Introduction to studying abroad.
 - Choosing the right destination.
 - Selecting program.
 - Financing and Scholarship.
 - Application Process.
 - Living and studying abroad.
 - Career and personal development
10. **Event Objectives & Outcomes:**
 - Objectives:**
 1. To provide students with a comprehensive understanding of the benefits and opportunities associated with studying abroad.

2. To equip students with practical knowledge and resources to navigate the study abroad process effectively.
3. To inspire students to embrace the personal and professional growth opportunities that studying abroad offers.

Outcomes:

1. Students will be able to articulate the personal, academic, and professional benefits of studying abroad, such as cultural immersion, academic enrichment, and enhanced employability.
2. Students will gain insight into the diverse range of study abroad programs available, including exchange programs, direct enrollment, and specialized study tours.
3. Students will leave with a heightened enthusiasm and motivation to pursue opportunities for international education.

11.Event Flyer:



12.Photos:



06. Event Report on Industrial Visit.

1.Event Title: Industrial Visit at “Eaglebyte Solutions Pvt Ltd”

2.Date of Event: 26/04/2024

3.Coordinator of Event: Prof. Vishal V. Mahale, Assistant Professor, SIEM, Nashik.

4.Name and Details of Resource Person: Miss Namrata Joshi, Eaglebyte Solutions Pvt Ltd

5.No of Participants: 62

6.Details of Participants: SE student of Computer Engineering.

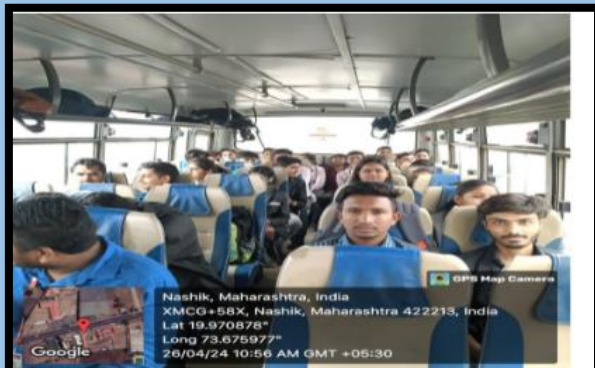
7.Objectives:

- 1.To make student familiar with real time Projects
- 2.To Explain and experience the Technological aspects used for the project
- 3.To Provide guidance on creating impactful projects

8.Outcome:

During their visit to the Eaglebyte Solutions pvt ltd, the students had the opportunity to immerse themselves in the practical world of software development. This industrial visit provided them with valuable insights into the implementation of advanced technologies, team building, project handling.

9.Photos:



07. Event Report on Industrial Visit.

1.Event: Hands-on workshop on LATEX.

2.Date of Event: 12/04/2024

3.Coordinator of Event: Prof. Korade, Assistant Professor, SIEM, Nashik

4.Name and Details of Resource Person: Prof. Vishal V. Mahale, Assistant Professor, SIEM, Nashik.

5.No of Participants: 87

6.Details of Participants: TE Students of Computer Engineering.

7.Course Content: Introduction to LATEX, Basic formats, Report creation, Document typesetting .

8.Objectives: To make students understand and learn LATEX for typesetting their documents and reports.

9.Outcome: The LaTeX workshop empowered students with essential skills for creating professional documents. They learned formatting techniques, mathematical typesetting, document structuring, and collaboration methods. Armed with these skills, students can now produce clear, polished documents efficiently.

10. Flyer:

SANDIP FOUNDATION
Sandip Institute of Engineering and Management



SIEM


Department of Computer Engineering

**HANDS-ON
WORKSHOP
ON
LATEX**

Typesetting Documents

**BY
Prof V. V. Mahale**

 12/04/2024  3pm to 5pm

 Computer Dept Seminar Hall

T_EX **M_IK_TE_X**

Hands-On Workshop On

LATEX

**BY
Prof. V. V. Mahale**

11. Photos:

