

N.E.S.G.I's Faculty of Engineering, Naigaon, Pune-412213 Department of E&TC Engineering

Date: 26th Feb 2014

# NOTICE

All S.E. E&TC students are hereby informed that Department of E&TC of NESGI-FOE has scheduled an expert lectures on Signals and systems subject for students of S.E.(E&TC).All are informed to attend the same. Schedule for Expert Lectures session is arranged as follows.

Sr.No	Date and Time	Location	Description
1.	29 <sup>th</sup> feb 2024 10 am to 4 pm	SE Classroom 344	Fundamentals of Signals and Systems, Continuous Time (CT) Signals
2.	9 <sup>th</sup> march 2024 10 am to 4 pm	SE Classroom 344	Continuous Time (CT) Systems, Discrete Time (DT) Signals
3.	29 <sup>th</sup> and 30 <sup>th</sup> march 2024 10 am to 4 pm	SE Classroom 344	Discrete Time (DT) Systems, Sampling and Reconstruction Z Transform of Signals
4.	12ª April,	SE Classroom	Laplace Transform and probability
	10 am to 4 pm	344	

Prof.S.R.Shinde

Coordinator

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Prof.L.M.Sagale

Head of Department

Navsahyadri Education Society's Group of Institutions, Pune Department of ENTC Engineering Academic Year 2023-24



Date: 08/4/2024

le. His Principal NESGI, Pune.

Subject: Pennission regarding arranging Gueat Lecture.

Respected Sir.

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We ENTC Engineering department of Navsahyndri Education Society's Group of Institutions, Naigaon want to arrange Guest lecture on "Signal And System" which is a Subject of academics for SE ENTC Engineering Students. I kindly request you to please sanction the Remuneration of 5000/- for 1 day.

The lecture will be conducted on 1218 April 2024, Time: - 10.00 AM to 4.00 PM.

# Remuneration = 1000° 5 hours =Rs 5000/ Day

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Subject		a d B A fluxinghts		
Signal And System	UNIT-6	Prof. R & Danapate	SEC 200 200 3 10	

#### Experience-

1. 30 years of experience in teaching field.

#### Qualification-



Navsahyadri Education Society's Group of Institutions, Pune Department of ENTC Engineering Academic Year 2023-24



Date: 21/3/2024

To, The Principal NESGI, Pune.

Subject: Permission regarding arranging Guest Lecture.

Respected Sir,

We ENTC Engineering department of Navsahyadri Education Society's Group of Institutions, Naigaon want to arrange Guest lecture on "Signal And System" which is a Subject of academics for SE ENTC Engineering Students. I kindly request you to please sanction the Remuneration of 5000/- for 1 day.

The lecture will be conducted on 29th march 2024 and 30th march 2024, Time: - 09.00 AM to 4.00 PM.

### Remuneration = 1000\* 10 hours =Rs 10000

Subject	Topics	Name of Guest	Class
Signal And System	UNIT-3 & 4	Prof. R A Barapate	S. E. ENTC

#### Experience-

1. 30 years of experience in teaching field.

#### Qualification-

1. Ph.D. (Pursuing), ME. (Microwave)

Prof. S. R. Shinde Co-Ordinator



Dr. M. V. Dalvi Principal





412213

## **Department of Electrical Engineering**

10/08/2023

# **ACTIVITY REPORT**

# PLC SCADA and Industry 4.0 Seminar

Date : 10 August 2023

Time : 11:30 AM – 02:00 PM

**Venue** : Electrical Engineering Department, Navsahyadri Group of Institutions.

**Attendee** : Departmental Staff and Students.

### Details :

On August 10, 2023, the Electrical Engineering Department of Navsahyadri Group of Institutions organized a expert Lecture on Programmable Logic Controllers (PLC) and Supervisory Control and Data Acquisition (SCADA) systems. The guest speaker, Mr. Vaibhav Dasture and Mr. Shikant Pawar an expert in the field of industrial automation and control systems, delivered an insightful presentation that provided attendees with a comprehensive understanding of PLCs and SCADA systems and their role in modern industries.

Key Topics Covered:

### Introduction to PLC and SCADA:

The lecture began with an overview of PLCs and SCADA systems, their history, and their significance in industrial automation. The speaker highlighted how PLCs serve as digital computers for controlling manufacturing processes, while SCADA systems provide real-time data visualization and control over large-scale processes.

### PLC Architecture and Programming:

The guest speaker delved into the architecture of PLCs, discussing the various components such as the central processing unit, input/output modules, memory, and communication interfaces. The audience gained insights into ladder logic programming, which is commonly used to create

control logic for PLCs. Practical examples of ladder logic programming were shared to illustrate the concepts.

### SCADA Components and Functionality:

Attendees were introduced to the components of a SCADA system, including human-machine interfaces (HMIs), remote terminal units (RTUs), communication protocols, and databases. The lecture emphasized the role of SCADA systems in real-time data acquisition, monitoring, and control of industrial processes.

### Integration of PLC and SCADA:

The guest speaker highlighted the seamless integration of PLCs and SCADA systems in industrial settings. Examples of how PLCs control processes on the factory floor, while SCADA systems provide operators with a visual representation of the entire process, were presented.

### **Industrial Applications and Case Studies:**

The lecture showcased several real-world industrial applications where PLCs and SCADA systems play a crucial role, such as manufacturing, power generation, water treatment, and oil and gas industries. Case studies were discussed to illustrate the efficiency and benefits brought about by these technologies.

### Advantages and Challenges:

The guest speaker discussed the advantages of using PLCs and SCADA systems, including increased productivity, reduced human error, and enhanced process control. The lecture also touched on potential challenges, such as cyber security concerns and the need for regular maintenance and updates.

### Photograph of the Event:







Prof. Akshay S. Kale (HOD Electrical) 9921659594 er.akshaykale@gmail.com



Dr. M. V. Dalvi Principal MESCI, Faculty of Engineering Settle 20, 72,71 Maguen, Tal Blor, Bit Peee

Dr. Manojkumar Dalvi Principal, NGIFOE, Pune

# NAVSAHYADRI GROUP OF INSTITUTES,FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213

### **Department of Computer Engineering**

# **ACTIVITY REPORT**

- 1. Title of Activity: Seminar on Scope for Automated testing in Industry
- 2. Date & venue: 23 August 2023 NESGI Campus.

### 3. Number of Students Participated: 56

#### 4. Outcomes of activity:

- **Increased Awareness:** Students were informed about the critical role of automated testing in modern software development and its advantages over manual testing.
- **Practical Understanding:** Participants gained hands-on experience with industry-standard automated testing tools like Selenium and TestNG.
- **Industry Readiness:** Students were made aware of the current trends and demands in the industry, preparing them for careers in automated testing.
- Motivation for Further Learning: The session inspired students to pursue additional training and certifications in automated testing to enhance their career prospects.

## 5. Description of activity:

- The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "Scope for Automated Testing in Industry". This seminar is conducted by guest of honor Mr. Rajesh Shukla. Our respected Principal Dr. M.V. Dalvi was present and actively participated in the activity to motivate students. Guests provide students with a comprehensive understanding of automated testing, a crucial aspect of the software development process. The session started with a presentation on the basics of software testing, highlighting the limitations of manual testing and the growing need for automation in the industry.
- Industry professionals were invited to share their experiences and insights, discussing the evolution of automated testing and the tools that are currently popular in the market. The speakers demonstrated how automated testing tools like Selenium and JUnit are used in real-world scenarios to ensure software quality and

reliability.

• The session included a live demonstration where students could observe the setup and execution of automated tests. This practical component allowed them to understand the workflow of automated testing and the benefits it offers in terms of efficiency and accuracy.

• The activity concluded with a Q&A session, where students engaged with the experts to clear their doubts and gain further insights into the practical challenges and solutions in automated testing.

## 6. Summary & conclusion

The activity was successful in meeting its goals of educating students about the importance and scope of automated testing in the industry. Participants left with a deeper understanding of the tools and techniques used in automated testing and were encouraged to further explore this field. The session emphasized the increasing demand for automated testing professionals and the career opportunities available in this domain. Overall, the event was highly beneficial for students aspiring to enter the software testing industry.

## 7. Feedback

The feedback from the participants was overwhelmingly positive. Students appreciated the depth of information provided and the practical demonstrations, which made the concepts more relatable. Many expressed a strong interest in pursuing further studies and certifications in automated testing. The session was praised for its relevance to the current industry needs and its ability to motivate students toward a career in this field.

## 8. Photos of activity.





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# Attendance

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Dr.M.V. Dalvi Principal



# Navsahyadri Education Society's Group of Institutes

# **FACULTY OF ENGINEERING**

Pune-Satara Road, Naigaon, Pune-412213

<u>Electrical Engineering Department</u>

14/09/2023

# ACTIVITY REPORT MATLAB WORKSHOP

Date : 14 September 2023

Venue : Electrical Engineering Department, Navsahyadri Group of Institutions

Attendee : Departmental Staff and Students

Details :

On September 14<sup>th</sup>,2023, the Electrical Engineering Department of Navsahyadri Group of Institutions organized a Workshop on MATLAB, on occasion Engineers day. The workshop commenced at 10:00 AM in the Class Room No. 311 of Electrical department.

Guest of today's program was Pratiksha Rachmale, working as trainer in ABC Training Institute. In this workshop following points are discussed.

**1. Workshop Topics:** MATLAB workshops can cover a wide range of topics, depending on thelevel and focus of the workshop.

Common topics include: Introduction to MATLAB basics: This covers the MATLAB environment, syntax, and basic operations.

Data visualization: Creating plots, charts, and graphs to visualize data.

Data analysis: Techniques for data manipulation, statistics, and data processing.

Numerical computation: Solving equations, performing mathematical operations, andworking with matrices.

Simulink: Introduction to Simulink, MATLAB's tool for modeling and simulating dynamic systems.

Image processing and signal processing: MATLAB's capabilities in these domains.

Machine learning and deep learning: How to use MATLAB for building and training machine learning models.

Advanced topics: More specialized topics like optimization, control systems, and more.

2. Workshop Format: Workshops can be conducted in various formats, including: In-person

workshops: These are held at physical locations, typically universities, training centers, or conference venues.

Online workshops: Conducted over web conferencing platforms, allowing participants to join remotely.

Self-paced workshops: Participants are given access to pre-recorded video lectures and exercises to complete at their own pace.

**3. Instructors:** Workshops are typically led by experienced instructors who are proficient in MATLAB. Instructors may be MATLAB experts, academics, or industry professionals with relevant expertise.

**4. Workshop Materials:** Participants often receive workshop materials such as lecture notes, code examples, datasets, and exercises to work on during the workshop. These materials are valuable for learning and reference.

Photograph of the Event :





Prof. A. D. Pachghare Workshop Coordinator Electrical Engg. Dept.



Prof. Akshay S. Kale HOD, Electrical Engg. Dept.

Dr. M. V. Dalvi Principal NESGI, Faculty of Engineering Get No.05,70,71,145pion, Tal Shor, Dist. Page

Dr. Manojkumar Dalvi Principal, NGIFOE, Pune



# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213
Department of Computer Engineering



# **ACTIVITY REPORT**

- 1. Title of Activity: Seminar on "AWS and Linux: Building Robust Cloud Infrastructures"
- 2. Date & venue: 26 September 2023 NESGI Campus.
- 3. Number of Students Participated: 61
- 4. Outcomes of activity:
- **Deep Understanding:** Students gained a comprehensive understanding of how AWS and Linux work together to build and manage robust cloud infrastructures.
- **Practical Skills:** Participants acquired hands-on experience in deploying and managing cloud resources using AWS with Linux environments.
- **Industry Knowledge:** Insights were provided into current industry practices and the role of Linux in optimizing AWS cloud services.
- **Career Enhancement:** The seminar equipped students with knowledge that enhances their qualifications for careers in cloud computing and system administration.

# 5. Description of activity:

- The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "AWS and Linux: Building Robust Cloud Infrastructures". This seminar is conducted by guest of honor Mr. Sumit Agarwal and. our respected Principal Dr. M.V. Dalvi was present and actively participated in the activity to motivate students. The seminar was designed to provide students with an in-depth exploration of how to leverage AWS and Linux to create and manage scalable, reliable cloud infrastructures.
- The session began with an introduction to the fundamentals of AWS cloud services and the role of Linux in cloud environments. Experts from the industry discussed key AWS services such as EC2, S3, and RDS, and how these services can be effectively managed and optimized using Linux.
- The seminar featured practical demonstrations where participants learned how to deploy Linux-based applications on AWS, configure virtual servers, and use AWS tools for monitoring and managing cloud resources. Key topics included setting up secure environments, automating tasks with scripts, and scaling applications to handle varying loads.
- Interactive exercises allowed students to apply what they learned by working on real-world scenarios, such as setting up a web server on AWS using Linux, configuring load balancers, and implementing backup strategies.

## 6. Summary & conclusion

The seminar successfully met its objectives by providing students with valuable insights into building and managing cloud infrastructures using AWS and Linux. Participants left with a strong understanding of how to utilize these technologies to create scalable and efficient cloud solutions. The hands-on experience gained through practical exercises was particularly beneficial, allowing students to apply theoretical knowledge in a practical setting. The seminar highlighted the importance of AWS and Linux skills in the cloud computing industry and encouraged students to pursue further learning and certification in these areas.

### 7. Feedback

Students appreciated the detailed explanations and hands-on approach, which made complex concepts more accessible. The practical demonstrations and exercises were particularly well-received, providing a tangible understanding of how to use AWS and Linux together. Many students expressed a keen interest in future workshops on advanced cloud topics and requested additional resources for further study. The seminar was praised for its relevance and practical value, contributing significantly to students' career preparation in cloud computing.

## 8. Photos of activity.





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Roll No.	Name of Students	Signature
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# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213

# **ACTIVITY REPORT**

### 1. Title of Activity: Seminar on DESIGN OF STEEL STRUCTURES (DSS) as per SPPU

pattern and structure by Dr. Atul Khatri

- 2. Event Coordinator: Prof. P.C.Shivtare
- 3. No. of members participated : 10
- 4. Date & venue: 12/11/2023, NGI, Naigaon, Pune

### 5. Outcomes of activity:

The lecture provides participants with a comprehensive overview of the principles and practices involved in designing steel structures, equipping them with the knowledge to apply these concepts in real-world projects.

### 6. Description of activity:

A seminar on DESIGN OF STEEL STRUCTURES (DSS) as per SPPU pattern by Dr. Atul Khatri was organised by the Department of Civil under the Flagship and Guidance of Dr.Dalvi, Principal, NGI, FOE. Lecture based on the design of steel structures introduces the fundamental principles and standards, discusses the types of steel sections and their applications, and covers design methods like ASD and LRFD. It includes case studies, recent advances in the field, and a Q&A session, providing a comprehensive overview for participants to enhance their understanding and practical skills in designing steel structures.

## 7. Activity Experience:

The participants felt that the delivery and presentation of the resource person was good and the seminar brought practical knowledge of the subject in them. They also felt that the seminar was coordinated very well and such seminar's should be arranged regularly.

# 8. Photos of Activity:





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Dr. M. V. Dalvi

Principal NESGI, Faculty of Engineering Get No.69,70,71,Nojum, Tal. Bhor, Dist. Pune

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Dr.M.V. Dalvi Principal



# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213

**Department of Computer Engineering** 



# **ACTIVITY REPORT**

- 1. Title of Activity: Workshop on AWS Cloud Networking Security: Protecting Your Data and Applications
- 2. Date & venue: 11 December 12 December 2023 NESGI Campus.
- 3. Number of Students Participated: 68
- 4. Outcomes of activity:
- Enhanced Security Knowledge: Students gained a thorough understanding of AWS networking security practices and tools.
- **Practical Skills:** Participants learned how to configure and manage AWS security features to protect cloud data and applications.
- **Industry Insights:** Insights into current security threats and best practices in AWS cloud networking were provided.
- **Career Advancement:** The seminar equipped students with valuable skills and knowledge that can enhance their career prospects in cloud security.

### 5. Description of activity:

- The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a workshop titled "AWS Cloud Networking Security: Protecting Your Data and Applications". This workshop is conducted by guest of honor Mr. Ravi Sharma. and Our respected Principal Dr. M.V. Dalvi were present and actively participated in the activity to motivate students. The workshop was designed to provide students with a comprehensive understanding of security practices for AWS cloud networking.
- The session began with an overview of the importance of cloud security, highlighting common threats and vulnerabilities specific to AWS environments. Industry experts discussed key AWS security services such as AWS Identity and Access Management (IAM), AWS Security Groups, and AWS Network Access Control

Lists (NACLs).

• The seminar featured detailed demonstrations on configuring these security features to safeguard AWS resources. Topics covered included setting up security groups for controlling inbound and outbound traffic, configuring NACLs for additional network layer security, and using AWS Shield and AWS WAF (Web Application Firewall) to protect against DDoS attacks and web threats.

• Participants engaged in hands-on exercises to apply what they learned, including setting up secure network architectures, implementing encryption for data at rest and in transit, and monitoring network traffic for potential security issues.

### 6. Summary & conclusion

The seminar effectively achieved its objectives by providing students with valuable insights into AWS cloud networking security. Students left with a solid understanding of how to implement and manage security measures to protect their cloud data and applications. The hands-on demonstrations and practical exercises were particularly beneficial, allowing students to gain real-world experience in securing AWS environments. The seminar underscored the critical importance of robust security practices in cloud computing and prepared students for careers in cloud security.

#### 7. Feedback

Feedback from participants was highly positive. Students appreciated the depth of the content and the practical approach of the seminar, which made complex security concepts more understandable and applicable. Many students expressed a strong interest in further exploring AWS security topics and requested additional workshops on related subjects. The seminar was praised for its relevance to current industry practices and its ability to provide actionable skills for future career development in cloud security.

### 8. Photos of activity.









# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213

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Department of Computer Engineering

# **ACTIVITY REPORT**

- 1. Title of Activity: In-Depth Data Analysis with Python: Methods, Tools, and Best Practices
- 2. Date & venue: 22 February 2024 NESGI Campus.
- 3. Number of Students Participated: 70
- 4. Outcomes of activity:

Enhanced Skills: Students developed advanced skills in data analysis using Python, including data

cleaning, exploration, and visualization.

**Tool Proficiency:** Participants became proficient in using Python libraries such as Pandas, NumPy, Matplotlib, and Seaborn.

**Best Practices:** Students learned best practices for handling and analyzing data, ensuring accuracy andreliability in their analyses.

**Practical Knowledge:** The seminar provided practical knowledge that students can apply to realworld dataanalysis projects and future careers.

### 5. Description of activity:

- The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "In-Depth Data Analysis with Python: Methods, Tools, and Best Practices". This seminar is conducted by guest of honor Mr. Rajesh Kumar and. our respected Principal Dr. M.V. Dalvi was present and actively participated in the activity to motivate students. The seminar was aimed to provide a comprehensive understanding of advanced data analysis techniques using Python.
- The session commenced with an introduction to the core Python libraries essential for data analysis, including Pandas for data manipulation, NumPy for numerical computations, and Matplotlib and Seaborn for data visualization.

### The seminar covered a range of topics:

- **Data Cleaning and Preprocessing:** Techniques for handling missing values, outliers, and data transformations.
- Exploratory Data Analysis (EDA): Methods for summarizing and exploring datasets to uncover patterns and insights.
- Advanced Visualization: Creating complex visualizations to effectively communicate data insights.

- Statistical Analysis: Applying statistical methods to analyze data and make data-driven decisions.
- Participants engaged in hands-on exercises and real-world case studies, where they applied the learned methods and tools to analyze datasets. The seminar also included discussions on best practices for ensuring the accuracy and reliability of data analysis results.

#### 6. Summary & conclusion

The seminar successfully achieved its objectives by providing students with in-depth knowledge and practical skills in data analysis with Python. The interactive sessions and hands-on exercises allowed participants to apply advanced techniques and tools, enhancing their proficiency in data analysis. The seminar highlighted the importance of best practices in data analysis and equipped students with valuable skills that are directly applicable to real-world scenarios. Overall, the seminar was a valuable educational experience, preparing students for future data analysis challenges and opportunities.

#### 7. Feedback

Students appreciated the detailed coverage of advanced data analysis techniques and the practical approach of the seminar. The hands-on exercises were particularly well-received, providing a tangible understanding of how to apply Python tools and methods to real data analysis tasks. Many students expressed interest in further workshops on related topics and requested additional resources for deepening their knowledge. The seminar was praised for its relevance to current industry practices and its effectiveness in enhancing participants' data analysisskills.



### 8. Photos of activity.





millety Dr.M.V. Dalvi Principal

## **Report of Workshop on Research Methodology**

17<sup>th</sup> Feb 2024

The Research Methodology Workshop was tailor-made to facilitate the academic requirements of the Post-Graduate student community.. The two-days trans-disciplinary workshop was conceptualised with the intention of knowledge-building on the fundamentals of research concepts, methodologies and processes in addition to providing hands-on training in synopsis/thesis writing with inputs on the essentials of academic writing.

The objectives of the workshop were

- ✤ To develop knowledge on the fundamentals of research
- To build knowledge on research design, application & data analysis
- ✤ To develop skills for synopsis/thesis development & academic writing

The workshop was conducted free of cost to the students. The workshop was organised using available resource persons and infrastructure in the University itself and incurred no expenses from the organisers or the University.

The programme was inaugurated by Dr P Sigamani, Associate Professor & Head, Department of Social Work and Dr E M Shankar Associate Professor & Head, Department of Life Sciences. Dr P Ravindran, Professor & Head, Department of Material Science gave a felicitation speech for the programme. The inaugural function was attended by Dr P Udhayakumar, Dr N Sivakami, Mr Chittaranjan Subudhi, Dr M Arivanandan and Dr Rajameenakshi who are Assistant Professors with Department of Social Work.

The workshop started with the session on 'Fundamentals of Research' by Dr P Ravindran, Professor & Head, Department of Material Science. The next session




'Research Process' was handled by Dr Nilesh Kate, Associate Professor & Head Department of Marketing The first session in the afternoon, 'Qualitative Methodology: Research Design, Sampling Design & Application' was taken by Dr N Sivakami, Assistant Professor Department of Marketing.This session was followed by 'Data Analysis & Presentation in Qualitative Research' handled by Mr Chittaranjan Subudhi, Assistant Professor Department of Marketing . The last session of the day was 'Essentials of Literature Review' which was taken by Dr E M Shankar, Associate Professor & Head, Department of Marketing

On the second day of the workshop, the first session 'Quantitative Methodology: Research Design, Sampling Design & Application' was taken by Dr Krishna Reddy Chittedi, Assistant Professor, Department of Economics. The following session, 'Data Analysis & Presentation in Quantitative Research' was handled by Mr Dr Gopinathan R, Assistant Professor, Department of Economics. A 'Handson training on Synopsis and Thesis' was given by Dr P Udhayakumar, Assistant Professor, Department of Marketing in the forenoon session.

The afternoon sessions included 'Essentials of Academic Writing' by Dr EM Shankar, Associate Professor & Head, Department of Life Sciences and 'Research Output, Outcome and Peer Review' by Dr Jayalakshmi Krishnan, Assistant Professor & Coordinator, Department of Epidemiology and Public Health.





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**Department of Computer Engineering** 

# **ACTIVITY REPORT**

- 1. Title of Activity: Next-Gen Data Science: Utilizing AI and Python for Advanced Analysis
- 2. Date & venue: 4 March 2024- 5 March 2024 NESGI Campus.
- 3. Number of Students Participated: 65
- 4. Outcomes of activity:

**Advanced Knowledge:** Students gained in-depth knowledge of how AI and Python can be utilized in datascience for advanced data analysis.

**Skill Development:** Participants developed practical skills in applying AI techniques using Python to solvecomplex data problems.

**Enhanced Understanding:** Attendees learned about the latest trends and technologies in data science and Al, including real-world applications and tools.

**Career Advancement:** The seminar equipped students with valuable skills and insights that enhance their careerprospects in data science and AI fields.

### 5. Description of activity:

The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "Next-Gen Data Science: Utilizing AI and Python for Advanced Analysis". This seminar was conducted by guest of honor Ms. Pooja Mehta and. our respected Principal Dr.

M.V. Dalvi was present and actively participated in the activity to motivate students. The seminar was designed to provide participants with a comprehensive understanding of how artificial intelligence (AI) and Python canbe leveraged for advanced data analysis.

The session began with an overview of the role of AI in modern data science, including key concepts and technologies such as machine learning and neural networks. Participants were introduced to Python libraries essential for AI and data science, including Pandas, NumPy, Scikit-Learn, and TensorFlow.

## Key topics covered included:

• AI and Machine Learning Basics: An introduction to AI concepts and machine learning algorithms, and how they apply to data analysis.

- **Data Preparation and Cleaning:** Techniques for preparing and cleaning data to ensure accuracy and reliability in analysis.
- Advanced Analytics: Implementing machine learning models and algorithms using Python to analyze complex datasets and derive actionable insights.
- **Real-World Applications:** Case studies and examples demonstrating how AI and Python are used in various industries to solve real-world problems.

The seminar featured hands-on exercises where students applied AI techniques using Python to real datasets. This practical approach helped participants gain experience in building and evaluating machine learning models and using AI tools for advanced data analysis.

#### 6. Summary & conclusion

The seminar effectively met its objectives by equipping students with a deep understanding of how AI and Python can be utilized in data science. The combination of theoretical knowledge and practical exercises provided participants with valuable skills that can be applied to real-world data challenges. The seminar highlighted the transformative potential of AI in data science and prepared students for future roles in these rapidly evolving fields.

#### 7. Feedback

Feedback from participants was overwhelmingly positive. Students appreciated the comprehensive coverage of advanced data science techniques and the practical application of AI with Python. The hands-on exercises and real-world examples were particularly well-received, providing valuable experience in implementing AI solutions. Many students expressed interest in further workshops on related topics and requested additional resources for deepening their understanding. The seminar was praised for its relevance to current industry trends and its effectiveness in advancing participants' data science skills.

#### 8. Photos of activity.







m Dr.M.V. Dalvi Principal

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#### **Department of Computer Engineering**

# **ACTIVITY REPORT**

- 1. Title of Activity: Data Visualization with Tableau, Creating Interactive Dashboards and Reports
- 2. Date & venue: 19 April 2024 NESGI Campus.
- 3. Number of Students Participated: 71
- 4. Outcomes of activity:

**Enhanced Skills:** Participants developed practical skills in using Tableau for creating interactive and visuallyappealing dashboards and reports.

**Improved Understanding:** Attendees gained a deeper understanding of data visualization principles and best practices.

Hands-On Experience: Students received hands-on training with Tableau, learning how to manipulate data, create visualizations, and build interactive dashboards.

**Real-World Applications:** The seminar highlighted real-world applications of data visualization in variousindustries, providing context for how these skills can be applied in professional settings.

### 5. Description of activity:

The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "Data Visualization with Tableau: Creating Interactive Dashboards and Reports". This seminar is conducted by guest of honor Mr. Vikram Singh and. our respected Principal Dr.

M.V. Dalvi was present and actively participated in the activity to motivate students. The seminar aimed to equip participants with the skills needed to effectively use Tableau for data visualization. The session included

**Introduction to Tableau:** Overview of Tableau's capabilities and its role in data visualization. Participantswere introduced to the Tableau interface and key features. **Data Preparation:** Techniques for preparing and importing data into Tableau, including data cleaning andtransformation.

**Creating Visualizations:** Hands-on exercises in creating various types of visualizations, such as bar charts, linegraphs, scatter plots, and maps.

**Building Dashboards:** Training on how to combine multiple visualizations into interactive dashboards, including adding filters, parameters, and interactivity.

**Report Generation:** Methods for designing and generating reports that effectively communicate insights and support decision-making.

**Case Studies:** Real-world examples demonstrating how Tableau is used in different industries for data analysisand reporting.

Participants engaged in interactive sessions with practical exercises using Tableau, which allowed them toapply the concepts learned and create their own dashboards and reports.

#### 6. Summary & conclusion

The seminar successfully provided participants with comprehensive training in Tableau for data visualization. By covering both theoretical concepts and practical applications, the session equipped students with the skills needed to create and manage interactive dashboards and reports. The hands-on approach ensured that attendees could directly apply what they learned to real-world scenarios, enhancing their ability to visualize and interpret data effectively.

#### 7. Feedback

Feedback from participants was highly positive. Students appreciated the practical, hands-on approach to learning Tableau and found the exercises to be highly relevant and beneficial. The real-world case studies were particularly valued, as they provided practical context for the skills learned. Many participants expressed interest in further workshops on advanced Tableau features and other data visualization tools. Suggestions for improvement included providing more examples of complex dashboard scenarios and offering additional supportfor beginners.

#### 8. Photos of activity.

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R Dr.M.V. Dalvi Principal



## NAVSAHYADRI EDUCATIONSOCIETY'S GROUP OF INSTITUTIONS, PUNE

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## Criterion 3-Research, Innovation sand Extension

3.2.2 Numberof workshops/seminars/conferences including programs conducted on Research Methodology, Intellectual Property Rights (IPR) and entrepreneurship during the last five years



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# **ACTIVITYREPORT**

- 1. Title of Activity: ARMBased EmbeddedWeb Server
- 2. Date&venue:7thSeptember2022, Computer Center NESGI

## 3. Outcomeofactivity:

- The ARM-Based Embedded Web Server project aimed to develop and implement a web server onARM architecture,exploringitsapplicationsinthe Internetof Things(IoT) and embedded systems.
- The project focused on utilizing ARM microcontrollers to host a web server that could handle HTTP requests and responses efficiently.

## 4. Descriptionof activity:

- Inauguration of function
- SpeechonARMBasedEmbeddedWebServer

### 5. Objectives:

### Understanding ARMArchitecture:

OverviewofARMarchitectureanditssuitabilityforembeddedsystems.Explorationof ARM microcontrollers with a focus on web server capabilities.

### WebServer Development:

SetupandconfigurationoftheARM-basedembeddedsystemforwebserverhosting. Development of basic web pages and dynamic content generation on the server.



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#### Integrationwith IoTDevices:

Investigate and implement communication protocols for IoT devices to interact with the embedded web server. Explore the potential for remote monitoring and control using web-based interfaces.

#### SecurityConsiderations:

Implementation of basic security measures such as authentication and encryption. Discussion on securing embedded web servers in IoT applications.

#### 6. Activities:

**1. ARM Architecture Workshop:** In-depth sessions on ARM architecture and its variations suitable for embedded applications. Hands-on exercises to familiarize participants with ARM microcontrollers.

#### 2. WebServer Development:

Participants configured ARM development environments and successfully set up web serverson ARM-basedplatforms.Codingsessionstocreatebasicweb pages,handle HTTP requests, and generate dynamic content.

#### 3. IoT Integration:

Implementation of communication protocols (e.g., MQTT, CoAP) for IoT device interaction. Participants explored real-world scenarios where an embedded web server could be utilized in IoT applications.

#### 4. SecurityImplementation:

Workshop sessions on securing the embedded web server, including authentication mechanisms. Discussions on potential vulnerabilities and best practices for securing IoT applications.



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#### 7. Achievements:

#### SuccessfulWebServer Deployment:

Participants achieved successful deployment of a functional web server on ARM architecture.

#### **IoTIntegration Demonstrations:**

Demonstrations showcased successful integration of the embedded web server with IoT devices for remote monitoring and control.

#### SecurityImplementation:

Basic security measures were implemented, highlighting the importance of securing embedded web servers in IoT applications.

#### KnowledgeTransfer:

Participants gained a solid understanding of ARM architecture, web server development, and IoT integration.

#### **Challenges:**

Limited resources on some ARM microcontrollers posed challenges in optimizing web server performance. Addressing security concerns and balancing them with resource constraints.

#### RecommendationsforFutureWork:

Explore advanced security measures for embedded web servers. Investigate optimization techniques for resource-constrained ARM microcontrollers.



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**8.** Conclusion: The ARM-Based Embedded Web Server project provided participants with valuable insights into ARM architecture, web server development, and IoT integration. The successful deployment of a functional embedded web server demonstrates the potential applications of this technology in various industries. The project not only addressed technical challenges but also emphasized the importance of security considerations in IoT applications.

### 9. Photosofthe workshop







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## **ACTIVITYREPORT**

## 1. Title of Activity: FlexibleBatteryTechnologies

2. Date&venue:7th September2022,ClassroomNo.11,ElectricalDepartment

### 3. Outcomeofactivity:

- Participants gained a comprehensive understanding of the principles, materials, and manufacturing processes involved in flexible battery technologies.
- Practical Skills Development:Participants acquired hands-on experience through workshops or practical sessions, including the assembly and testing of flexible battery prototypes.
- Awareness of Emerging Trends: Attendees were updated on the latest advancements and emerging trends in the field of flexible battery technologies.
- Applications and Innovations Showcase: The workshop showcased various applications and innovative projects utilizing flexible batteries, providing participants with insights into the real-world impact of the technology.
- Expert Insights:Industry experts and thought leaders shared valuable insights, providing participants with a deeper understanding of the challenges, opportunities, and future directions in flexible battery technologies.

### 4. Description of activity:

- Inauguration of function
- SpeechonFlexibleBatteryTechnologies

**5. Hands-OnSessions:** Practical demonstrations and exercises to enhance understanding. Opportunities for participants to work with flexible battery prototypes.



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**6. ExpertSessions:**Talksandpresentationsbyindustryexpertsonthelatestdevelopments. Q&A sessions for participants to engage with speakers.

**7. Networking Opportunities:**Structured networking sessions to foster collaboration and idea exchange. Building connections with professionals in the field.

### 8. Photosofthe workshop







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Title of Activity : A Reporton, "3DPrintingWorkshop".

### AcademicYear:2022-23

Date&Venue:12-Sept-2022,AbdulKalam Memorial Hall

Activity :3DPrinting Workshop

Resource Person / Trainer: Mr. DigvijayPote & Ms. Pooja Patil Co-

ordinator:MechanicalEngineeringDepartment(Prof.J.P.Hugar) Target

audience: TE & BE Students

#### TotalNumberofStudentsParticipated:116

Durationof Course: One Day

#### **Objectives:**

- 1. Thiscoursewilldemonstrateontheworking of 3Dprinter,
- 2. 3Dprintingcoursewill also explore the future of it and discussion how it will revolutionize the world.
- 3. Uponthecompletionofthiscourse, students will have the solid understanding of 3D printing, its potential, and ability to print 3D designs.

### **OutcomeofActivity:**

#### Attheconclusion of this course, students should be able to

- $1. \ Learnabout the materials, designing of CAD models, working of a 3DP rinter$
- 2. Understandhowtobuildandcalibratea 3Dprinter
- 3. UnderstandthebasicsofGcodegeneration
- 4. Theparticipantswillget3Dprintedmodelsthattheydesign





### ActivityDescription:

This training program organized for Third year & Final year Mechanical Engineering students. Training create lots of awareness among the students regarding 3D Printing and its applications. Students learnt about 3D printing programming & completed hands on training.



Workshopon3DPrintingTechnology

### Feedback:

 Allstudents arehappyabout thecoursecontentofthisactivity. Theyfeel motivated toward 3Dprintingcourse. Allobjectives are fulfilled.





#### NAVSAHYADRI EDUCATION SOCIETYS GROUP OF INSTITUTIONS FACULTY OF ENGINEERING, NAIGAON, PUNE DEPARTMENT OF MECHANICAL ENGINEERING A.Y. 2022-23 TE

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3	BHILARE VAIBHAV ANIL	Institution
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#### NAVSAHYADRI GROUP OF INSTITUTES FACULTY OF ENGINEERING, NAIGAON, PUNE DEPARTMENT OF MECHANICAL ENGINEERING

Roll.No.	Name of Student	Signature
1.	Abhishek Babasaheb Jadhay	- the
2	Ajit Dilip Arjun	GRager-
3	Barwakar Abhijit Prakash	adaen
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13	Inamear Saurabh Pramod	Charlotte
14	Jadhay Shivprasad Bapurao	5 Jacket
15	Jagtap Vaishnavi Uday	- Jugar
16	JAMKHANDI AAZAM M.RAFIQUE	- Balan
17	Jaybhaye Amol Dinkar	American Ar
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24	Maheen Noorshan Khan	TVP PARATA
25	Maity Amit Kumar Narayan	6.76 10101
26	Malve Kajal Shankar	Mana
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Sr.No.69,70,71,Naigaon(Nasarapur),Pune-SataraHighway,Pune-412213 ACTIVITYREPORT

1. Title of Activity: ElectricityTheft Monitoring System

## 2. Date&venue:21<sup>st</sup> October2022,SeminarHall,NESGI

### 3. Outcomeofactivity:

- The primary objective of the workshop was to create awareness about the prevalence of electricity theft, discuss the challenges associated with it, and introduce an effective monitoring system as a solution.
- The workshop aimed to foster collaboration among industry experts, government officials, and technology providers to enhance the understanding of electricity the ft issues and promote the adoption of advanced monitoring systems.

#### 4. Description of activity:

- Inauguration of function
- SpeechonElectricityTheftMonitoring System

#### 5. IntroductiontoElectricityTheft:

The workshop began with an overview of the extent of electricity theft globally, emphasizing its impactontheeconomy, powerdistributionsystems, and the environment. Current Challenges in Electricity

Theft Monitoring: Participants engaged in discussions about the challenges faced by utilities in detecting and preventing electricity theft. Issues such as outdated monitoring systems, lack of real-time data, and difficulties in identifying illegal connections were addressed.



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### OverviewofElectricityTheftMonitoringSystem:

A comprehensive presentation was made on the features and functionalities of the Electricity Theft Monitoring System. This included real-time data collection, analytics, and the integration of advanced technologies such as smart meters and artificial intelligence.

### TechnicalFeaturesand Capabilities:

Detailed technical aspects of the monitoring system, including data encryption, remote monitoringcapabilities, and scalability, were discussed. Participants gained insights into how the system could be customized to suit various utility infrastructures.

### CaseStudiesandSuccessStories:

Real-world case studies and success stories of utilities that had successfully implemented the ElectricityTheft Monitoring System were presented. These examples showcased the positive impact on reducing electricity theft and improving overall system efficiency.

#### InteractiveSessionsandPanel Discussions:

Participants actively engaged in interactive sessions and panel discussions, providing a platform for exchanging ideas, sharing experiences, and addressing specific challenges faced by different regions and utilities.

#### Q&ASession:

A dedicated question and answer session allowed participants to seek clarification, share concerns, and gather more information about the implementation and operation of the Electricity Theft Monitoring System.

#### NetworkingandCollaborationOpportunities:

The workshop provided ample opportunities for networking among participants, fostering collaborationsbetweentechnologyproviders, utility companies, and government agencies to



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collectivelycombat electricitytheft.

#### 6. Conclusion:

The Electricity Theft Monitoring System workshop proved to be a valuable platform for knowledge exchange and collaboration within the energy sector. Participants gained a deeper understanding of the challenges associated with electricity theft and explored effective solutions through the implementation of advanced monitoring systems. The event concluded with a call to action for increased cooperation among stakeholders to address this critical issue and ensure a more sustainable and secure energy future.

#### 7. Photosofthe workshop:





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	Naigaon Pune-4	12213
	Department of Electrica	d Engineering
	Academie Year 1022-	-23(SEM-I)
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Prof. S. V. Tayada
# NAVSAHYADRIGROUPOFINSTITUTES FACULTY OF ENGINEERING

### 1. Titleof Activity:Research Paper Writing

- 2. Date&Venue:9<sup>th</sup> Jan2023,AbdulKalam SeminarHall.
- 3. Outcomes of Activity:studentsgotfollowingconcepts

HowtowriteResearchPaper

Performliteraturesurveyinrespectedarea

### 4. DescriptionofActivity:

A session was held on 9January 2023 from 10:00 a.m. to 1.00 pm at NESGI, Mechanical Engineering Department. The Program started as the guest arrivedat 09:30 am. Prof. S. V. Tawade, HoD Mechanical Engineering, Prof S. A. Dahake, program coordinators, welcomed the guest Mr. J. S. Mane, and Dr. R. J. Patil Principal of NESGI, FOE, Pune, graced the occasionwith his valuable words. Total numbers of participants were 75.

### 5. ActivityExperience:

All the students really appreciated the contents Discussed in session. Like how to evaluate problemstatements and analyze data using technologies, find out Problem Statement & Algorithm, Performance study & Conclusion.

StudentsrealizedthatthisinteractioncanhelpthemtoimprovetheirResearch Paper WritingSkills.

### 6. Assessmentofactivityoutcomes:

 $\label{eq:linear} After the completion of session, feedback was taken from the students.$ 





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# NAVSAHYADRIGROUPOFINSTITUTES FACULTY OF ENGINEERING

7. Photos:



### 8. Feedback:

Allthestudentsreallyappreciated the contents that we redelive red; they realized that interactions likes these can help them improve their Paper Writing Skill.





Principal NESGI, Faculty of Engineering Gat No.69,70,71,Naigaon, Tal. Bhor, Dist. Pune

## NAVSAHYADRIGROUPOFINSTITUTES FACULTY OF ENGINEERING

#### NAVSAHYADRI GROUP OF INSTITUTES FACULTY OF ENGINEERING, NAIGAON, PUNE DEPARTMENT OF MECHANICAL ENGINEERING A V 2022-23 BE

Roll.No.	Name of Student	Signature
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Principal NESGI, Faculty of Engineering Gat No.89,70,71,Naigaon, Tal. Bhor, Dist. Pune

### **Title of Activity: Intellectual Property Rights**

No. of participant staffs: 43 Event Co-Ordinator: Prof. J. P. Hugar Date&venue:13/03/2023,SeminarHall Outcomes of activity:

Intellectual Property (IP) is the fuel that powers the engine of prosperity, nurturing invention and innovation. The delegates were very enthusiastic to know about the IPR and also had given theirbest forthesuccessoftheprogram. Nowparticipants feel that they are ready to filepatent of innovations and inventions.

### **Descriptionofactivity:**

The training of the above mentioned subject was given to the faculty by inviting the senior expert Prof. (Dr.) B.K. Sarkar Member of IETE, ISTE, SMU, IIHT, Global R/D, and GEH. One day training period was divided into two sessions each of about two hours. Following points were discussed in this workshop

- $1.\ Patent Procedure, Time Line and Cost of Patent Filing in India Short Introduction.$
- 2. HowtoFileaStandardPatent-TheApplicationProcessinAustralia.
- 3. PatentLawinIndia,PatentFilinginIndia,PatentRegistrationin India,IndianPatent Law
- 4. HowtoDraftaProvisionalPatentApplication
- 5. PatentApplicationFilingProcess
- 6. WhatIsaPatentandHowtoApplyforaPatent?
- 7. SalesTechniques-HowtoSellIdeastoBigCompanies-AskEvan

### ActivityExperience:

Thiseventmadethestaffawareofgrowingneedforpromotionandprotectionoftheintellectualassets, in the form of Patents. Staff appreciated the contents discussed in session.



Principal NESGI, Faculty of Engineering Gat No.69,70,71,Naigaon, Tal. Bhor, Dist. Pune

### AssessmentofactivityOutcomes:

Themainobjectiveofthetrainingprogramistoincrease IPfilingofstates.Staffbenefited by this workshop and they started thinking in that direction.



### IntellectualPropertyRightsworkshopPhoto

### Feedback:

Staffreallyappreciated the contents that we redelive red in this session. From the feedback of the audience, session on IPR & Patents is suggested to be pursued again.



Principal NESGI, Faculty of Engineering Gat No.89,70,71,Naigaon, Tal. Bhor, Dist. Pune

### NAVSAHYADRIGROUPOFINSTITUTES FACULTY OF ENGINEERING DepartmentofMechanicalEngineering

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Principal NESGI, Faculty of Engineering Gat No.69,70,71,Naigaon, Tal. Bhor, Dist. Pune



# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

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Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213
Department of Computer Engineering

# **ACTIVITY REPORT**

- 1. **Title of Activity:** Java and Artificial Intelligence: Integrating AI into Java Applications for Smarter Solutions
- 2. Date & venue: 12 November 2024 NESGI Campus.
- 3. Number of Students Participated: 65
- 4. Outcomes of activity:
- Enhanced Knowledge: Participants gained a comprehensive understanding of how AI can be integrated into Java applications.
- **Practical Skills:** Students learned how to use Java libraries and frameworks to implement AI and machine learning features.
- **Real-World Application:** Attendees were able to explore practical use cases of AI in Java applications, from building recommendation systems to implementing natural language processing.
- **Career Development:** The seminar provided valuable insights and skills that are applicable to careers in both AI and software development.

### 5. Description of activity:

The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "Java and Artificial Intelligence: Integrating AI into Java Applications for Smarter Solutions". This seminar was conducted by guest of honor Mr. Karan Verma and. our respected Principal Dr. M.V. Dalvi was present and actively participated in the activity to motivate students. The seminar was designed to provide participants with knowledge and practical skills on how to enhance Java applications using artificial intelligence.

## The session covered:

**Introduction to AI in Java:** Overview of artificial intelligence concepts and how Java can be utilized to implement AI features.

**AI Libraries and Frameworks:** Detailed exploration of popular Java libraries and frameworks for AI, such asDeeplearning4j, Weka, and Apache Mahout.

**Building AI Models:** Hands-on experience in creating, training, and evaluating machine learning models usingJava. Participants worked with real-world datasets to apply AI techniques.

**Integration Techniques:** Methods for integrating AI models into Java applications, including practical examples of implementing recommendation systems, predictive analytics, and natural language processing.

**Case Studies:** Examination of successful AI-powered Java applications across various industries, illustratingpractical implementations and benefits.

Participants engaged in interactive sessions and practical exercises, which included coding examples and demonstrations of how to integrate AI functionalities into Java applications. This hands-on approach provided students with direct experience in applying AI techniques using Java.

### 6. Summary & conclusion

The seminar effectively achieved its goals by equipping students with a robust understanding of integrating AI into Java applications. The combination of theoretical knowledge and practical exercises allowed participants to gain valuable skills and insights into enhancing applications with AI. The hands-on experience with AI libraries and frameworks was particularly beneficial, offering real-world relevance to the concepts discussed.

### 7. Feedback

Feedback from participants was overwhelmingly positive. Students appreciated the in-depth coverage of AI concepts and the practical application of these concepts using Java. The hands-on exercises and real-world case studies were highlighted as particularly valuable, providing practical experience in integrating AI features. Many students expressed interest in further workshops on related topics and requested additional resources for continued learning. The seminar was praised for its relevance to current industry trends and its effectiveness in enhancing participants' skills in AI and Java development.

### 8. Photos of activity.







#### Attendance

Roll N	o. Name of Students	Signature
1	AMATE ADITYA PRASHANT	Aprole
2	AMILE ARTI MININATH	
3	ANJALI SANTOSH KOLHE	AKOUN
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Muluh Dr.M.V. Dalvi Principal



# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213 Department of Computer Engineering



# ACTIVITY REPORT

- 1. Title of Activity: Seminar on Beyond the Basics: Expert Data Analysis with Excel and Power BI
- 2. Date & venue: 4 December 2022 NESGI Campus.
- 3. Number of Students Participated: 61
- 4. Outcomes of activity:

Advanced Skill Development: Students acquired advanced skills in data analysis and visualization using Excel and Power BI.

**Enhanced Proficiency:** Participants gained proficiency in creating complex data models, dashboards, andreports.

**Practical Knowledge:** Attendees learned how to apply advanced techniques to real-world data analysisscenarios.

**Career Preparation:** The seminar provided insights and skills that can enhance career opportunities in dataanalysis and business intelligence.

## 5. Description of activity:

- The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "Beyond the Basics: Expert Data Analysis with Excel and Power BI". This seminar was conducted by guest of honor Mr. Sanjay Reddy and. our respected Principal Dr. R.J. Patil was present and actively participated in the activity to motivate students. The seminar was organized to provide participants with advanced knowledge and skills in using Excel and Power BI for data analysis and visualization.
- The session began with a review of foundational concepts in Excel and Power BI, setting the stage for more advanced topics. The seminar then covered several key areas:
- Advanced Excel Techniques: Participants explored advanced Excel features such as complex formulas, pivot tables, and data validation. Techniques for automating tasks with macros and VBA (Visual Basic for Applications) were also demonstrated.
- **Power BI Features:** The seminar delved into advanced Power BI functionalities, including data modeling, DAX (Data Analysis Expressions) formulas, and creating interactive dashboards.
- Integration and Visualization: Participants learned how to integrate data from various sources, create

sophisticated visualizations, and design interactive reports that provide actionable insights.

• Hands-on exercises allowed students to apply these techniques to practical examples, building dashboards and reports that could be used in real-world scenarios. The seminar also included discussions on best practices for data analysis and visualization to ensure the accuracy and effectiveness of the outputs.

### 6. Summary & conclusion

The seminar successfully met its goals by equipping students with advanced data analysis skills using Excel and Power BI. The comprehensive coverage of advanced techniques and hands-on exercises provided participants with practical experience and a deeper understanding of data analysis tools. The seminar emphasized the importance of advanced data skills in making informed business decisions and preparing students for roles in data analysis and business intelligence. Overall, the seminar was a valuable learning experience, enhancing participants' proficiency in Excel and Power BI and preparing them for more complex data analysis tasks.

### 7. Feedback

Feedback from participants was highly positive. Students appreciated the depth of the content and the practical application of advanced techniques in Excel and Power BI. The interactive sessions and hands-on exercises were particularly well-received, allowing participants to gain practical experience. Many students expressed interest in further workshops on related topics and requested additional resources for continued learning. The seminar was praised for its relevance to current industry practices and its effectiveness in advancing participants' data analysisskills.

## 8. Photos of activity.









Principal NESGI, Faculty of Engineering Gat No.89,70,71, Naigaon, Tal. Bhor, Dist. Pune

## Attendance

Roll No.	Name of Students	Signature
1	AMATE ADITYA PRASHANT	
2	AMBLE ARTI MININATH	Atthe
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Principal NESGI, Faculty of Engineering Gat No.89,70,71,Naigaon, Tal. Bhor, Dist. Pune



# Navsahyadri Education Society's Group of Institutes FACULTY OF ENGINEERING

Pune-Satara Road, Naigaon, Pune-412213

Electrical Engineering Department

22/09/2021

# ACTIVITY REPORT

## **IOT – INTERNET OF THINGS**

Date : 22 September 2021

Venue : Electrical Engineering Department, Navsahyadri Group of Institutions

Attendee 24

Details :

On 22 September 2021 the Electrical Engineering Department of Navsahyadri Group of Institutions organized a Workshop on IOT – Internet of Things. The workshop commenced at 01:00 PM in the Class Room No. 311 of Electrical department.

Guest of today's program was Miss. Bhakti Raut, working as trainer in Cognizant Pvt. Ltd. In this workshop following points are discussed.

## 1. Introduction

Overview of IoT:

Brief explanation of IoT and its relevance. Objective: Describe the purpose of implementing IoT solutions in the college.

## 2. Project Highlights Smart Campus Initiatives:

- Smart Classrooms: Integration of IoT devices for interactive learning experiences (e.g., smart boards, automated lighting and climate control).
- Campus Security: Implementation of IoT-based surveillance systems, smart locks, and access control.
- Energy Management: Use of IoT sensors for monitoring and optimizing energy consumption in campus buildings.
- Student Projects and Research: IoT-based
- Environmental Monitoring: Projects focused on using IoT sensors to monitor air quality, temperature, and humidity.

- Wearable Health Devices: Research on wearable IoT devices for health monitoring and student well-being. Administrative and Facilities Management:
- Smart Parking Solutions: IoT-enabled parking management systems to track parking space availability.
- Maintenance Automation: Use of IoT sensors for predictive maintenance of infrastructure and facilities.

## 3. Achievements and Impact Improved Efficiency:

- Description of how IoT solutions have streamlined administrative processes and reduced operational costs.
- Enhanced Learning Experience: How IoT technologies have contributed to a more interactive and engaging learning environment.
- Increased Safety and Security: Overview of the enhancements in campus security and emergency response.

## 4. Challenges and Solutions Technical Challenges: I

- Issues encountered with IoT device integration, network connectivity, or data management.
- Solutions Implemented: Strategies and solutions adopted to overcome these challenges.

### 5. Collaboration and Partnerships Industry Partnerships:

- Collaboration with technology companies, startups, or other institutions to support IoT initiatives.
- Student Involvement: Engagement of students in IoT projects, internships, or research activities.

## 6. Future Plans Upcoming Projects:

- Overview of planned IoT projects and initiatives.
- Technological Upgrades: Plans for integrating advanced IoT technologies or expanding current implementations.
- Long-term Goals: Vision for the future use of IoT in enhancing the campus experience and academic environment.

## 7. Conclusion Summary:

• Recap of key points discussed in the report.

# 8. Photograph of the Event :







Prof. Akshay S. Kale Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. R. J. Patil Principal, NGIFOE, Pune

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Head of Department



# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

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Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213
Department of Computer Engineering

# **ACTIVITY REPORT**

- 1. Title of Activity: AWS-Powered DevOps: Building and Managing Scalable Applications
- 2. Date & venue: 19 January 2022 NESGI Campus.
- 3. Number of Students Participated: 50
- 4. Outcomes of activity:
- **Comprehensive Understanding:** Students gained a deep understanding of DevOps principles and how AWS supports these practices in building scalable applications.
- Hands-On Experience: Participants were exposed to practical AWS tools and services like AWS CodePipeline, AWS CodeDeploy, and AWS CloudFormation.
- **Industry Readiness:** The session equipped students with the knowledge and skills needed to apply DevOps practices in real-world scenarios, particularly in cloud environments.
- Enhanced Career Prospects: Students were informed about the growing demand for DevOps professionals with AWS expertise, encouraging them to pursue relevant certifications and training.

### 5. Description of activity:

- The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "AWS-Powered DevOps: Building and Managing Scalable Applications". This seminar is conducted by guest of honor Mr. Rohit Jain. and our respected Principal Dr. R. J. Patil was present and actively participated in the activity to motivate students. The seminar was organized to provide students with an in-depth look at how DevOps practices can be implemented using AWS services to create scalable and efficient applications. The session began with an overview of the core principles of DevOps, including continuous integration, continuous delivery, and infrastructure as code.
- Industry experts, including AWS-certified professionals, were invited to speak about the importance of DevOps in modern software development. They demonstrated how AWS services like CodePipeline and CodeDeploy streamline the development and deployment process, allowing teams to deliver high-quality software more quickly and reliably.
- The seminar included a hands-on workshop where students could interact with AWS services directly. They were guided through setting up a continuous delivery pipeline, automating infrastructure management with AWS CloudFormation, and deploying applications in a scalable environment. This practical session allowed students to experience the power and flexibility of AWS in managing DevOps workflows.

#### 6. Summary & conclusion

The seminar was highly successful in achieving its objectives of educating students about the integration of DevOps practices with AWS services. Participants left with a clear understanding of how AWS can be leveraged to build and manage scalable applications efficiently. The session highlighted the growing importance of cloud-based DevOps in the industry and provided students with the skills and knowledge to pursue further learning and career opportunities in this field. Overall, the event was well-received, with students expressing a strong interest in continuing their exploration of AWS-powered DevOps.

#### 7. Feedback

Feedback from participants was overwhelmingly positive. Students appreciated the combination of theoretical knowledge and practical application, which made the concepts easier to grasp and more relevant to real-world scenarios. Many students expressed enthusiasm for further workshops and seminars on related topics, particularly those involving hands-on AWS experience. The seminar was praised for its relevance to current industry trends and its ability to provide valuable skills for future career development.

#### 8. Photos of activity.









Principal NESGI, Faculty of Engineering Gat No.89,70,71,Naigaon, Tal. Bhor, Dist. Pune

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Principal NESGI, Faculty of Engineering Gat No.89,70,71, Natjourn, Tal. Bhor, Dist. Pune



# NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING

Sr. No. 69,70,71, Naigaon (Nasarapur), Pune-Satara Highway, Pune-412213 Department of Computer Engineering



# **ACTIVITY REPORT**

- 1. Title of Activity: Mastering Python from Frontend to Backend
- 2. Date & venue: 16 February 2022 NESGI Campus.
- 3. Number of Students Participated: 67
- 4. Outcomes of activity:
- **Comprehensive Understanding:** Students gained a thorough understanding of full-stack web development using Python, from frontend to backend.
- **Practical Skills:** Participants developed practical skills in using Python frameworks and libraries for both frontend and backend development.
- Enhanced Proficiency: Attendees became proficient in building complete web applications with Python, integrating frontend technologies with backend services.
- **Career Preparation:** The seminar provided insights and skills relevant to careers in web development, equipping students for roles in full-stack development.

### 5. Description of activity:

The Computer Engineering Department of NAVSAHYADRI GROUP OF INSTITUTES, FACULTY OF ENGINEERING organized a Seminar titled "Mastering Python from Frontend to Backend". This seminar was conducted by guest of honor Ms. Priya Nair and. our respected Principal Dr. R. J. Patil was present and actively participated in the activity to motivate students. The seminar was aimed to provide a holistic view of full-stack web development using Python.

The session began with an overview of the full-stack development process, highlighting the importance of both frontend and backend components in creating robust web applications.

### Key topics covered included:

**Frontend Development:** Introduction to frontend technologies, including HTML, CSS, and JavaScript. The seminar explored how to use frameworks like Flask or Django to integrate Python with frontend code and build interactive user interfaces.

**Backend Development:** Deep dive into backend development with Python, including using Flask or Django for building server-side logic, managing databases, and handling user authentication and authorization.

**Integration Techniques:** Methods for connecting frontend and backend components, including RESTful APIs and AJAX.

**Deployment and Testing:** Best practices for deploying web applications and testing both frontend and backend components to ensure reliability and performance.

Participants engaged in hands-on exercises to build a complete web application, applying the concepts and tools discussed. The practical approach allowed students to experience the full development lifecycle, from designing user interfaces to deploying the final application.

#### 6. Summary & conclusion

The seminar successfully achieved its objectives by providing students with a comprehensive understanding of full-stack web development using Python. The combination of theoretical knowledge and hands-on exercises offered participants valuable experience in building and deploying web applications. The seminar emphasized the importance of integrating frontend and backend technologies and provided practical skills applicable to real- world development projects.

#### 7. Feedback

Students appreciated the detailed coverage of both frontend and backend development aspects and the practical exercises that reinforced their learning. Many students found the hands-on approach particularly beneficial, as it provided real-world experience in building complete web applications. Requests for further workshops on advanced topics and additional resources for continued learning were common. The seminar was praised for its relevance to industry practices and its effectiveness in preparing students for careers in full-stack web development.

### 8. Photos of activity.







Principal NESGI, Faculty of Engineering Gat No.89,70,71,Naigaon, Tal. Bhor, Dist. Pune

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Principal NESGI, Faculty of Engineering Gat No.50,70,71 Matcann, Tal. Bhor, Dist. Pane



# Navsahyadri Education Society's Group of Institutes FACULTY OF ENGINEERING

Pune-Satara Road, Naigaon, Pune-412213

**Electrical Engineering Department** 

20/08/2020

# **ACTIVITY REPORT**

# RECENT TRENDS ELECTRICAL HYBRID VEHICLE

Date : 20<sup>th</sup> August 2020

Venue : Electrical Engineering Department, Navsahyadri Group of Institutions

Attendee : 37

Details :

On 20<sup>th</sup> August 2020, the Electrical Engineering Department of Navsahyadri Group of Institutions organized a Workshop on, Recent Trends in Electrical Hybrid vehicle. The workshop commenced at 11:00 AM in the Class Room No. 307 of Electrical department.

Guest of today's program was Mr. R. J. Bhattacharya, working as Senior Engineer in ELESOA HEV.

In this workshop following points are discussed.

## **1** Introduction

### 1.1<u>Overview</u>

Electrical Hybrid Vehicles combine traditional internal combustion engines (ICE) with electric propulsion systems. This integration aims to enhance fuel efficiency, reduce emissions, and improve overall vehicle performance.

### 1.2Objectives

To study the design and operation of hybrid powertrains. To evaluate performance metrics, including fuel efficiency and emissions. To assess the impact of hybrid technology on vehicle dynamics and user experience.

# 2. Components of EHV

## 2.1 Powertrain Internal Combustion Engine (ICE):

Provides power and generates electricity. Electric Motor(s): Provides additional power and facilitates regenerative braking. Battery Pack: Stores electrical energy for propulsion and auxiliary systems. Power Electronics: Manages energy flow between the ICE, electric motor, and battery.

## 2.2 Control Systems Hybrid Control Unit:

Optimizes power distribution between ICE and electric motor. Battery Management System (BMS): Monitors battery health and state of charge. Energy Management System: Manages energy sources to maximize efficiency.

# **3. Activities Conducted**

### 3.1 Research and Development Literature Review:

Investigated current hybrid technologies and market trends. Technology Assessment: Evaluated various hybrid configurations (e.g., series, parallel, series-parallel).

## 3.2 Design and Prototyping Powertrain Design:

Developed design specifications for integrating ICE with electric motors. Battery Integration: Designed battery management strategies and cooling solutions. Control Algorithms: Created algorithms for efficient power distribution and energy management.

## 3.3 Testing and Validation Performance Testing:

Conducted tests to measure fuel efficiency, electric range, and overall performance. Emissions Testing: Assessed emissions levels to ensure compliance with regulatory standards. Durability Testing: Evaluated the longevity and reliability of hybrid components under various conditions.

### 3.4 Data Analysis Efficiency Metrics:

Analyzed fuel consumption, electric range, and energy efficiency. User Experience: Collected feedback on vehicle handling, comfort, and driving dynamics.

# 4. Results

### **4.1 Performance Metrics Fuel Efficiency:**

Achieved a 30% improvement in fuel efficiency compared to conventional vehicles. Electric Range: Demonstrated an electric-only range of 50 miles under optimal conditions. Emissions Reduction: Reduced CO2 emissions by 40% compared to traditional ICE vehicles.

## 4.2 Issues Encountered Battery Degradation:

Addressed issues related to battery performance and lifespan. Integration Challenges: Overcame difficulties in integrating powertrain components seamlessly.

## 4.3 Lessons Learned

Importance of optimizing energy management for balancing performance and efficiency. Need for ongoing research into advanced battery technologies and materials.

## 5. Future Work

### 5.1 Improvements Advanced Battery Technologies:

Explore next-generation batteries with higher energy densities. Enhanced Control Systems: Develop more sophisticated algorithms for better power management.

### 5.2 Research Directions Autonomous Driving Integration:

Investigate the integration of hybrid technology with autonomous driving systems. Renewable Energy Synergies: Explore potential for integrating renewable energy sources into hybrid systems.

# 6. Conclusion

The EHV project has highlighted the potential of hybrid technology to improve fuel efficiency and reduce emissions. Continued advancements in powertrain design, battery technology, and control systems will drive future developments in the field.

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Prof. S. P. Kuchekar Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. Manojkumar Dalvi Principal, NGIFOE, Pune

# 7. Photograph of the Event :





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Prof. S. P. Kuchekar Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.

Dr. Manojkumar Dalvi Principal, NGIFOE, Pune

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# Navsahyadri Education Society's Group of Institutes FACULTY OF ENGINEERING

Pune-Satara Road, Naigaon, Pune-412213

**Electrical Engineering Department** 

08/11/2019

# **ACTIVITY REPORT**

# RENEWABLE ENERGY TECHNOLOGIES

Date : 8<sup>th</sup> November 2019

Venue : Electrical Engineering Department, Navsahyadri Group of Institutions

Attendee : 36

Details :

On 8<sup>th</sup> November 2019 the Electrical Engineering Department of Navsahyadri Group of Institutions organized a Workshop on Enewable Energy Technology. The workshop commenced at 10:00 AM in the Class Room No. 309 of Electrical department.

Guest of today's program was Mr. Ajinkya Patil, working as Junior Engineer.

In this workshop following points are discussed.

# 1. Introduction

Overview of Renewable Energy: Briefly explain renewable energy and its importance. Objective: Outline the goals for integrating renewable energy technologies in the college.

# 2. Project Highlights

- Solar Energy Initiatives: Solar Panels: Installation and performance of solar panels on campus buildings.
- Educational Programs: Workshops and courses on solar energy technologies.

#### Wind Energy Projects:

• Wind Turbines: Setup and output of small-scale wind turbines. Research and Development: Student and faculty research on wind energy efficiency.

- Energy Efficiency and Storage:Battery Storage Systems: Integration of battery storage for energy management.
- Energy Conservation Measures: Implementation of energy-saving practices and technologies.

# 3. Achievements and Impact Sustainability Goals:

- How the projects contribute to the college's sustainability targets.
- Cost Savings: Reduction in energy costs and overall financial impact. Educational Value: Enhancement of academic programs and student involvement.

# 4. Challenges and Solutions Technical Issues:

- Challenges with technology installation, maintenance, or performance.
- Solutions: Approaches taken to resolve these issues and improve system effectiveness.

# 5. Collaboration and Partnerships Industry Partnerships:

- Collaborations with renewable energy companies or research institutions.
- Student Engagement: Opportunities for students to participate in projects or internships.

# 6. Future Plans Upcoming Projects:

- Planned installations or research in renewable energy technologies.
- Technological Advancements: Exploration of new technologies and upgrades to existing systems. Long-term Vision: Goals for expanding renewable energy use on campus.

# 7. Conclusion Summary:

- Recap of key achievements and impact of renewable energy projects.
- Acknowledgements: Recognition of contributors and supporters.
- Contact Information: Details for further inquiries or follow-up.



Prof. Akshay S. Kale Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. R. J. Patil Principal, NGIFOE, Pune

# 8. Photograph of the Event:





Prof. Akshay S. Kale Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. R. J. Patil Principal, NGIFOE, Pune

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# Navsahyadri Education Society's Group of Institutes FACULTY OF ENGINEERING

Pune-Satara Road, Naigaon, Pune-412213

**Electrical Engineering Department** 

11/12/2019

# **ACTIVITY REPORT**

## EMERGING TRENDS IN ELECTRICAL SOLAR SYSTEM

Date : 11<sup>th</sup> December 2019

Venue : Electrical Engineering Department, Navsahyadri Group of Institutions

Attendee : 33

Details

On 11<sup>th</sup> December 2019, the Electrical Engineering Department of Navsahyadri Group of Institutions organized a Workshop on Emerging Trends in Electrical Solar System. The workshop commenced at 10:00 AM in the Class Room No. 309 of Electrical department. Guest of today's program wasMr. Yogesh Patil, working as Testing Engineer at Atos Pvt. Ltd. In this workshop following points are discussed.

## **1. Introduction**

1.1Overview An Electrical Solar System converts sunlight into electrical energy using photovoltaic (PV) panels. This renewable energy system aims to provide sustainable power, reduce utility costs, and decrease carbon footprints.

1.2 Objectives To design and install a solar power system. To evaluate system performance and efficiency. To assess the economic and environmental benefits of solar energy.

## 2. Components of Solar System

### 2.1 Photovoltaic Panels Solar Cells:

Convert sunlight into direct current (DC) electricity. Modules: Arrays of cells connected to increase power output.

### 2.2 Inverter DC to AC Conversion:

Converts DC electricity from the panels to alternating current (AC) for use in the electrical grid or home.

## 2.3 Battery Storage (Optional) Energy Storage:

Stores excess energy for use when sunlight is not available.

### 2.4 Charge Controller Regulation:

Manages the charging of batteries (if used) and protects against overcharging.

### 2.5 Mounting System Installation Framework:

Secures panels to roofs or ground mounts.

## **3. Activities Conducted**

#### 3.1 Design and Planning Site Assessment:

Evaluated the location for optimal solar exposure and system feasibility. System Design: Designed the layout of PV panels, inverter, and storage components. Permit Acquisition: Secured necessary permits and approvals for installation.

### **3.2 Installation Panel Mounting:**

Installed PV panels on designated mounts. Electrical Wiring: Connected panels to the inverter and the building's electrical system. System Integration: Installed and tested the inverter and charge controller.

### **3.3 Testing and Commissioning Performance Testing:**

Verified the system's efficiency and power output. System Calibration: Adjusted settings on the inverter and charge controller for optimal performance. Safety Checks: Ensured all electrical connections and components met safety standards.

### **3.4 Data Monitoring Energy Production Tracking:**

Monitored the amount of electricity generated and consumed. System Maintenance: Conducted routine inspections and maintenance to ensure continued performance.

## 4. Results

### 4.1 Performance Metrics Energy Output:

Achieved an average output of 5 kWh per day. Efficiency: The system conversion efficiency was measured at 18%. Cost Savings: Reduced electricity bills by 40% annually.

### **4.2 Issues Encountered Installation Challenges:**

Faced issues with panel alignment and wiring complications. Maintenance Needs: Identified the need for periodic cleaning and inspection of panels.

### 4.3 Lessons Learned

Importance of accurate site assessment for optimal panel placement. Regular maintenance is crucial for maintaining system efficiency.

## 5. Future Work

#### 5.1 System Upgrades Advanced Panels:

Explore higher efficiency PV panels for increased output. Smart Inverters: Investigate smart inverters with enhanced monitoring and control features.

#### **5.2 Research Directions Energy Storage Solutions:**

Research advanced battery technologies for better storage capacity. Integration with Smart Grids: Study the potential for integrating solar systems with smart grid technologies.

## 6. Conclusion

The installation and operation of the electrical solar system have demonstrated significant benefits in energy savings and environmental impact reduction. Future enhancements and ongoing research will further improve system efficiency and integration capabilities.



Prof. Akshay S. Kale Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. R. J. Patil Principal, NGIFOE, Pune

# 7. Photograph of the Event:





Prof. Akshay S. Kale Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. R. J. Patil Principal, NGIFOE, Pune

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Prof. S. D. Babar

**B.E Class Teacher** 

Prod S. V. Tayade

Head of Department



# Navsahyadri Education Society's Group of Institutes

# FACULTY OF ENGINEERING

Pune-Satara Road, Naigaon, Pune-412213

# **Electrical Engineering Department**

03/09/2020

# **ACTIVITY REPORT**

## **BMS - BATTERY MANGEMENT SYSTEM**

Date : 3rd September 2020

- Venue : Electrical Engineering Department, Navsahyadri Group of Institutions
- Attendee 35

#### Details

On 3rd September 2020, the Electrical Engineering Department of Navsahyadri Group of Institutions organized a Workshop on BMS – Battery Management System. The workshop commenced at 10:30 AM in the Class Room No. 311 of Electrical department.

Guest of today's program was Dr. A. P. Bhagwat, working as Production Engineer at Microtex India Pvt. Ltd.

In this workshop following points are discussed.

# 1. Introduction

#### Overview

A Battery Management System (BMS) is crucial for monitoring and managing battery performance, ensuring safety, longevity, and efficiency. It plays a pivotal role in various applications, including electric vehicles (EVs), renewable energy storage, and consumer electronics.

#### Objectives

To monitor the state of charge (SoC) and state of health (SoH) of batteries. To balance cell voltages and ensure safe operation. To protect batteries from overcharging, deep discharge, and thermal extremes.

## 2. Components of BMS

#### Hardware Components Microcontroller/Processor:

Central unit for data processing and control. Voltage and Current Sensors: Measure individual cell voltages and overall current. Temperature Sensors: Monitor battery temperature to prevent overheating. Balancing Circuitry: Ensures uniform charge distribution across cells. Communication Interfaces: Facilitates data exchange between the BMS and external systems (e.g., CAN bus, UART).

#### **Software Components Firmware:**

Embedded software for real-time data acquisition and processing. Data Logging: Records battery performance data for analysis and diagnostics. Protection Algorithms: Implement safety protocols to prevent malfunction.

### 3. Activities Conducted

#### **Research and Development Literature Review:**

Analyzed recent advancements in BMS technologies and methodologies. Technology Assessment: Evaluated different BMS architectures and their applicability to specific use cases.

#### **Design and Prototyping Circuit Design:**

Developed schematics for voltage sensing, current measurement, and balancing circuits. PCB Layout: Designed and tested printed circuit boards (PCBs) for the BMS hardware. Firmware Development: Programmed microcontroller firmware for real-time monitoring and control.

#### **Testing and Validation Bench Testing:**

Conducted initial tests on the BMS prototype to verify voltage measurements, current sensing, and balancing functionality. Performance Testing: Assessed the BMS under various operating conditions to ensure stability and accuracy. Safety Testing: Evaluated the BMS's response to overcharge, short circuit, and thermal events.

#### **Integration System Integration:**

Incorporated the BMS into a test battery pack and assessed its performance in a real-world scenario. Communication Testing: Verified the communication protocols and data exchange between the BMS and external devices.

# 4. Results

## **Performance Metrics Accuracy:**

Achieved ±0.5% accuracy in voltage and current measurements.

Response Time: Real-time processing with a latency of less than 50 milliseconds. Balancing Efficiency: Maintained cell voltage within ±10 mV across all cells.

### **Issues Encountered**

Thermal Management: Addressed overheating issues by improving cooling solutions. Firmware Bugs: Resolved issues related to data logging and protection algorithms.

## **Lessons Learned:**

Importance of thorough testing under diverse conditions. Need for robust thermal management in high-power applications.

# 5. Future Work

## **Improvements Advanced Balancing Techniques:**

Explore more efficient cell balancing methods.

Enhanced Communication Protocols: Develop support for additional communication interfaces and protocols.

## **Research Directions Integration with IoT:**

Investigate the potential for remote monitoring and control via Internet of Things (IoT) platforms.

Machine Learning: Explore the use of machine learning algorithms for predictive maintenance and performance optimization.

# 6. Conclusion

The BMS project has demonstrated significant progress in enhancing battery performance and safety. The activities conducted have laid a solid foundation for future advancements and applications. Continued research and development will focus on refining system capabilities and expanding its applicability to emerging technologies.



Prof. A. D. Pachghare Workshop Coordinator Electrical Engg. Dept. Prof. S. V. Tayade HOD, Electrical Engg. Dept. Dr. R. J. Patil Principal, NGIFOE, Pune

# 7. Photograph of the Event:





Prof. A. D. Pachghare Workshop Coordinator Electrical Engg. Dept.



Prof. S. V. Tayade HOD, Electrical Engg. Dept.



Dr. R. J. Patil Principal, NGIFOE, Pune

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