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VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

In Association With IIC

REPORT ON “SKILL FOUNDATION PROGRAM ON GENERATIVE AI”

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INTRODUCTION

In the rapidly evolving field of Information Technology, it has become essential for engineering students to acquire knowledge not only in programming and Artificial Intelligence but also in sustainable and environmentally responsible practices. With this objective, a **four-day workshop** was organized for the students of the **Information Science and Engineering (ISE) Department**.

The workshop aimed to provide comprehensive knowledge of **Green Skills, Python Programming, Machine Learning, Deep Learning**, and **Neural Networks**, along with practical exposure to model building using modern frameworks. The sessions were conducted by **Mr. Raghunandhan M S**, a skilled and experienced trainer in Artificial Intelligence and emerging technologies.

The workshop was structured in a progressive manner, beginning with fundamental concepts and gradually moving towards advanced topics such as Deep Learning and Neural Networks. Each day combined theoretical explanations with hands-on practical sessions, ensuring effective learning and application of concepts.

ABOUT THE RESOURCE PERSON

The workshop was conducted by **Mr. Raghunandhan M S**, who possesses strong expertise in Python programming, Machine Learning, Deep Learning, and Artificial Intelligence. His teaching approach focused on clarity of concepts, real-world examples, and interactive hands-on sessions.

Mr. Raghunandhan M S effectively explained complex topics in a simplified manner, enabling students from different levels of understanding to grasp advanced concepts. His guidance throughout the workshop helped students gain confidence in implementing AI models and understanding sustainable computing practices.

OBJECTIVES OF THE WORKSHOP

The major objectives of the workshop were:

- To create awareness about **Green Skills** and sustainable development in computing
- To introduce students to **Python programming** as a foundation for AI and ML
- To provide conceptual understanding of **Machine Learning and Deep Learning**
- To explain the working principles of **Neural Networks**
- To provide hands-on experience in building and training AI models using TensorFlow
- To evaluate students through practical assessments

DAY 1: GREEN SKILLS AND INTRODUCTION TO PYTHON

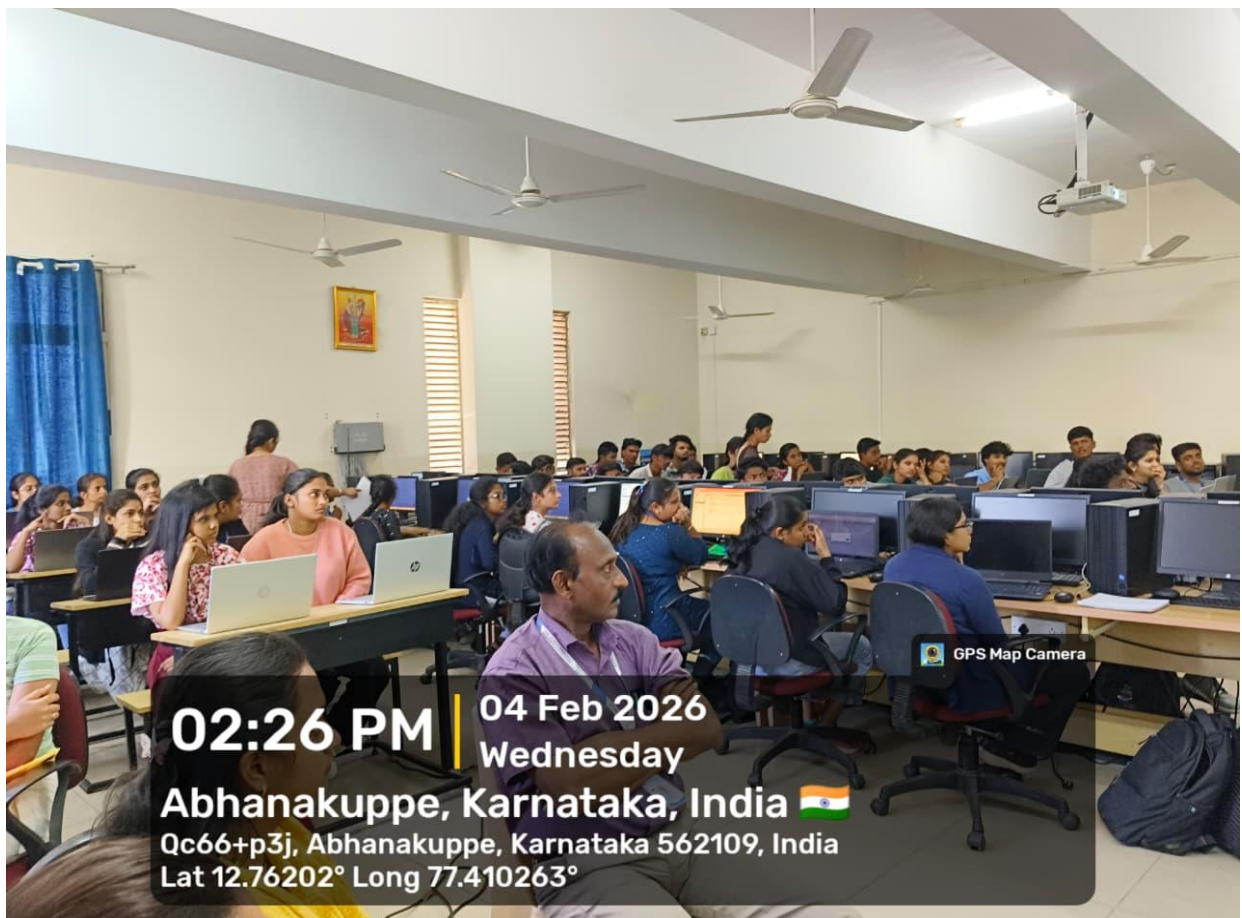
The first day of the workshop commenced with an introduction to **Green Skills**. Students were educated on the importance of sustainability in the IT sector, energy-efficient systems, and eco-friendly technological practices. The session emphasized how software developers can contribute to environmental protection by writing optimized code, reducing computational complexity, and efficiently utilizing computational resources.

Following the Green Skills session, students were introduced to the basics of **Python programming**. The topics covered included:

- Introduction to Python and its applications
- Features and advantages of Python
- Installation and setting up the Python environment
- Variables and data types
- Basic input and output operations

Hands-on coding exercises were conducted to help students understand fundamental concepts. Students practiced writing simple Python programs to strengthen their understanding of variables and basic operations.





DAY 2: CONTROL STRUCTURES AND FUNCTIONS IN PYTHON

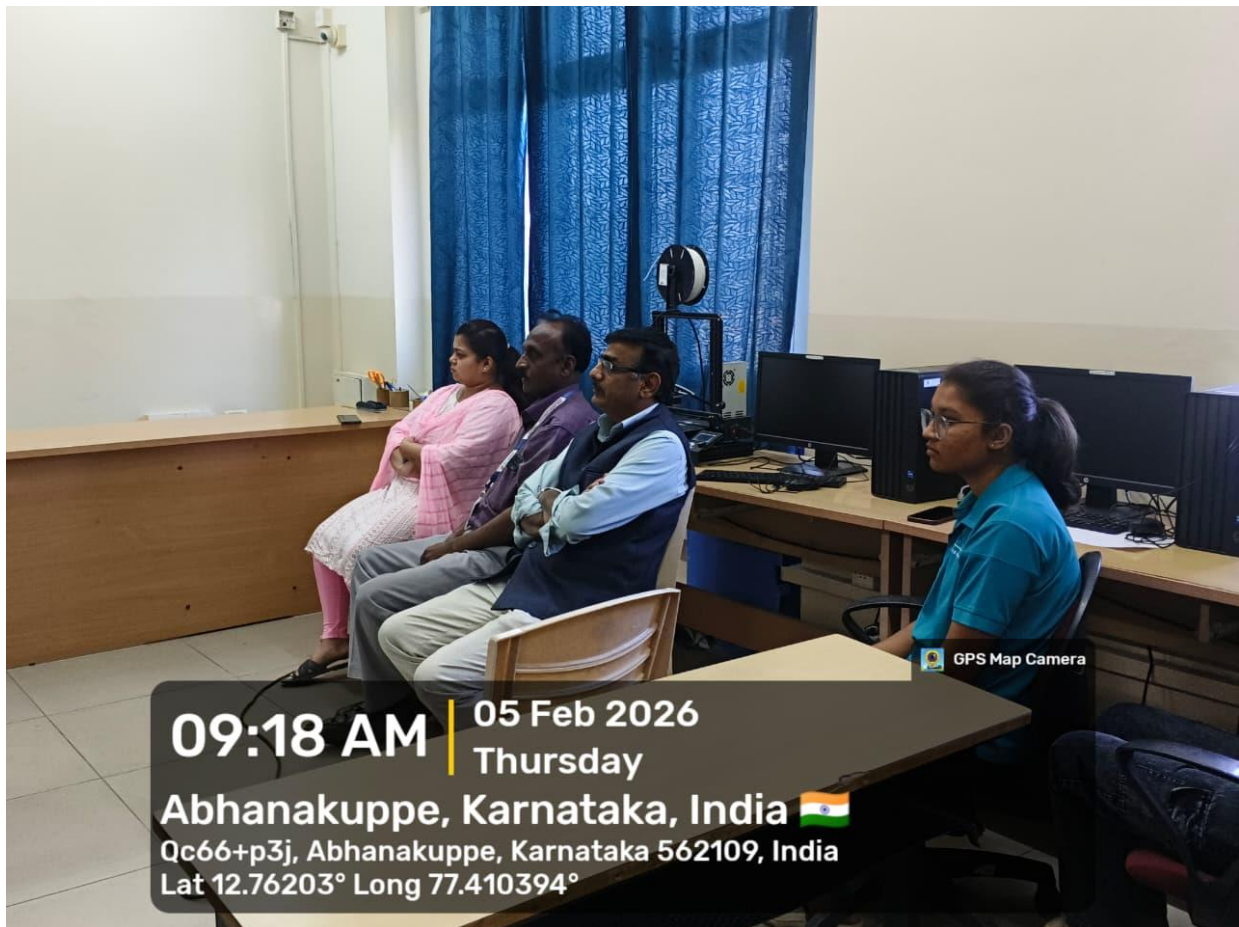
The second day focused on advancing students' knowledge of Python programming by covering control structures and modular programming concepts.

The topics covered included:

- Operators and expressions
- Conditional statements (if, if-else, nested conditions)
- Looping constructs (for loop, while loop)
- Functions and modular programming

Students engaged in hands-on coding exercises throughout the session. They implemented decision-making programs, practiced loops for repetitive tasks, and created user-defined functions. These practical sessions enhanced their logical thinking, problem-solving abilities, and overall programming skills.





DAY 3: GREEN SKILLS AND MACHINE LEARNING FUNDAMENTALS

The second day began with a discussion on the role of **Green Skills in Machine Learning systems**. The trainer emphasized the importance of optimizing datasets, reducing unnecessary computations, and building efficient models to minimize energy consumption.

The Machine Learning session covered the following concepts in detail:

- Introduction to Artificial Intelligence and Machine Learning
- Differences between AI, ML, and Deep Learning
- Types of Machine Learning:
 - Supervised Learning
 - Unsupervised Learning
 - Reinforcement Learning
- Data collection and data preprocessing
- Feature selection and feature scaling
- Model training and testing
- Evaluation metrics such as accuracy and error rates

Real-life examples were used to explain Machine Learning applications such as recommendation systems, spam detection, and prediction models. Students also worked on basic ML implementations using Python libraries, gaining practical exposure.





DAY 4: GREEN SKILLS, DEEP LEARNING AND TENSORFLOW MODEL DEVELOPMENT

The third day focused on **Deep Learning**, an advanced branch of Machine Learning. The trainer explained how Deep Learning models handle complex data such as images, audio, and text.

Topics discussed included:

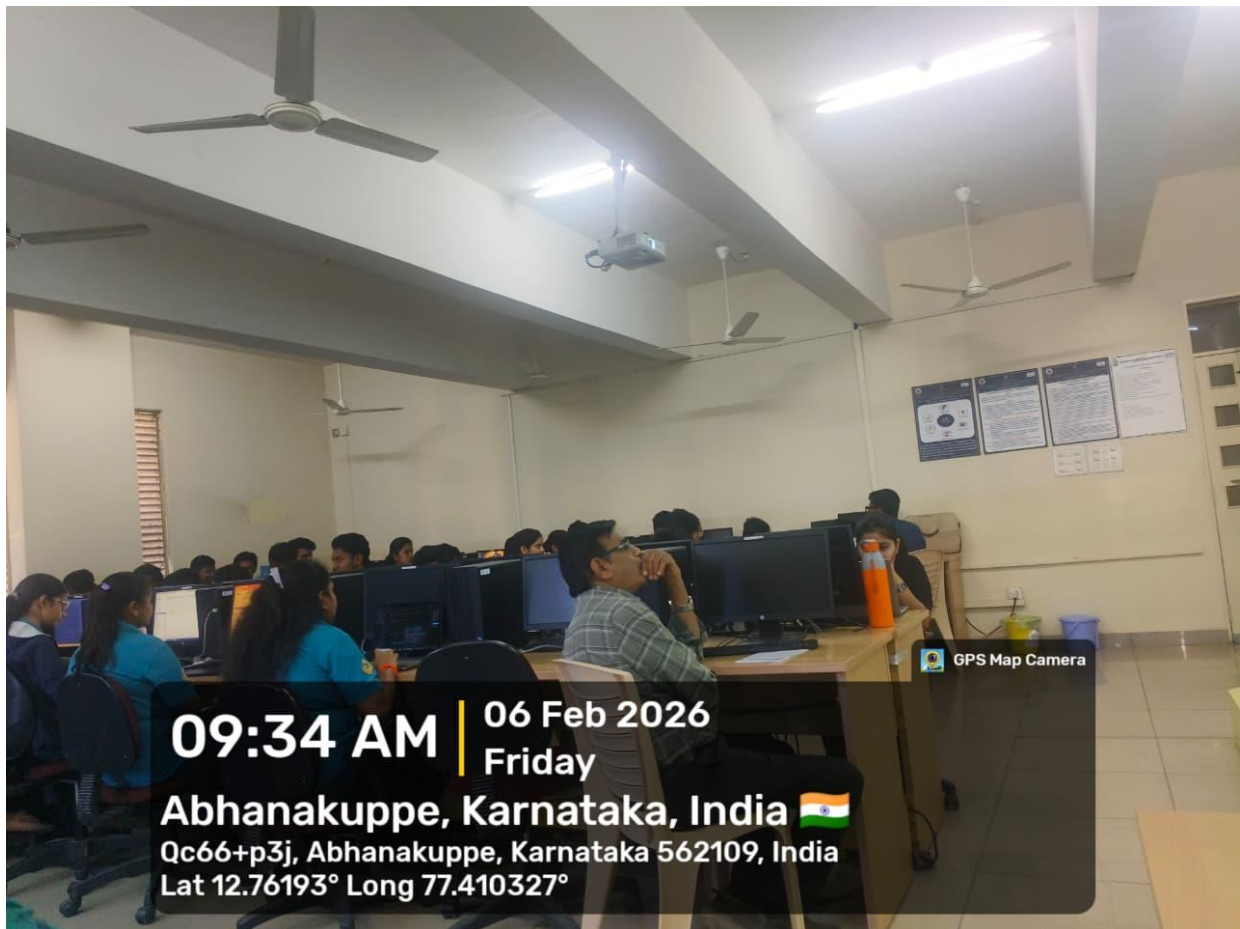
- Introduction to Deep Learning
- Artificial Neural Networks (ANN)
- Structure of neural networks:
 - Input layer
 - Hidden layers
 - Output layer
- Activation functions such as ReLU and Sigmoid
- Loss functions and optimizers
- Overfitting and underfitting

A major highlight of the day was the **hands-on model building session using TensorFlow**.

Students were guided step-by-step through:

- Loading and preprocessing datasets
- Designing the model architecture
- Compiling the model
- Training the model
- Evaluating model performance

This session helped students understand how theoretical Deep Learning concepts are implemented in real-world applications.



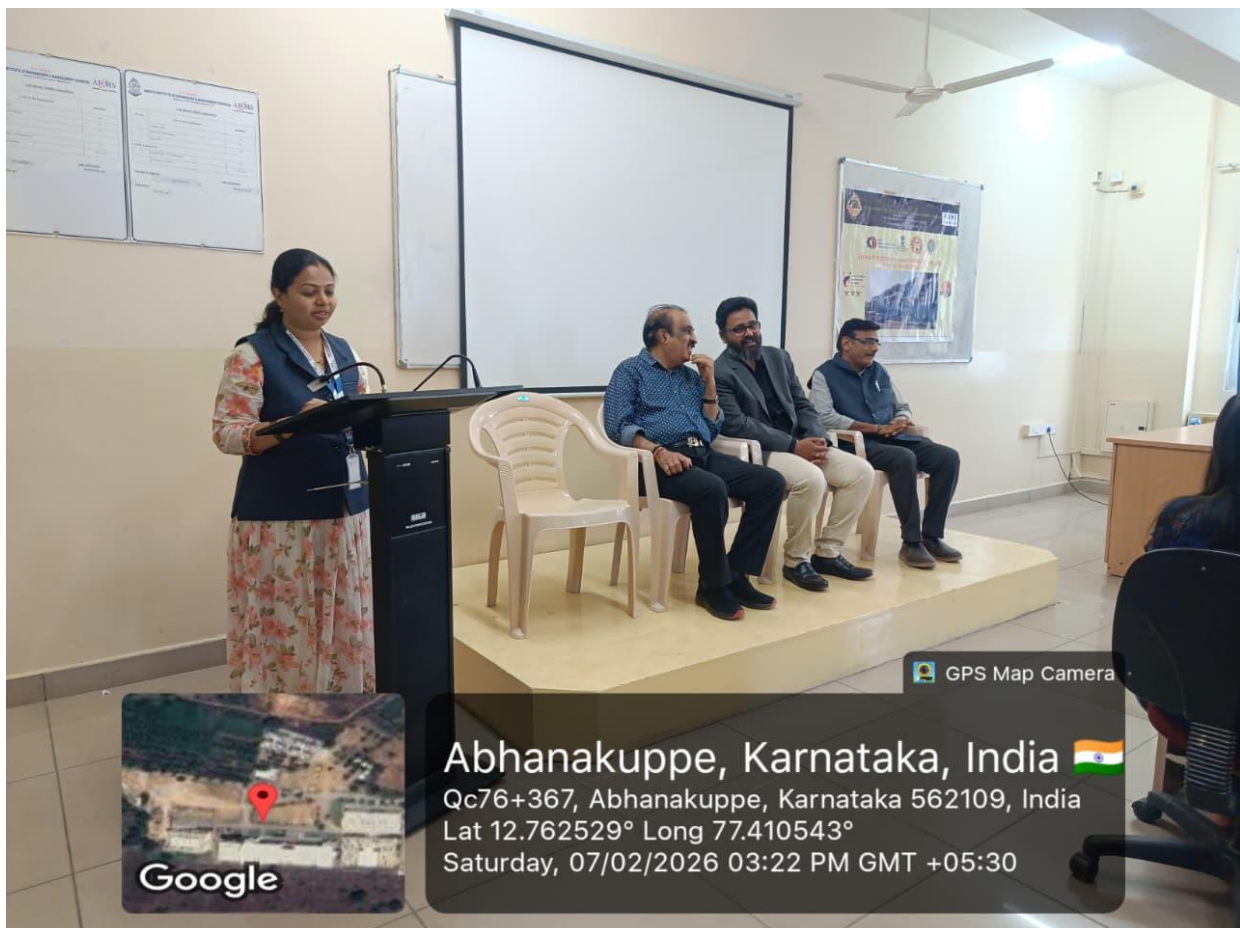
DAY 5: GREEN SKILLS, NEURAL NETWORKS, MODEL BUILDING AND ASSESSMENT

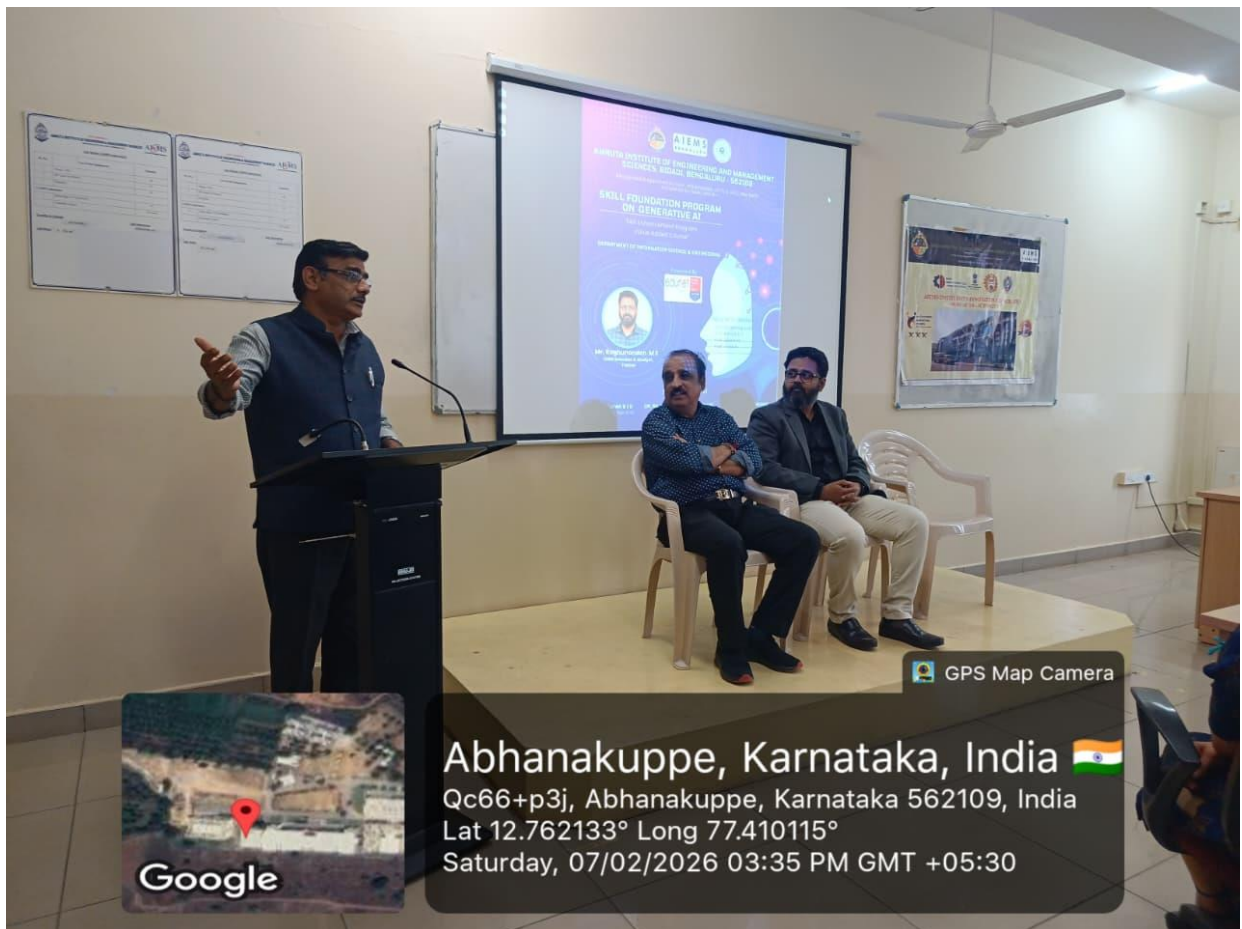
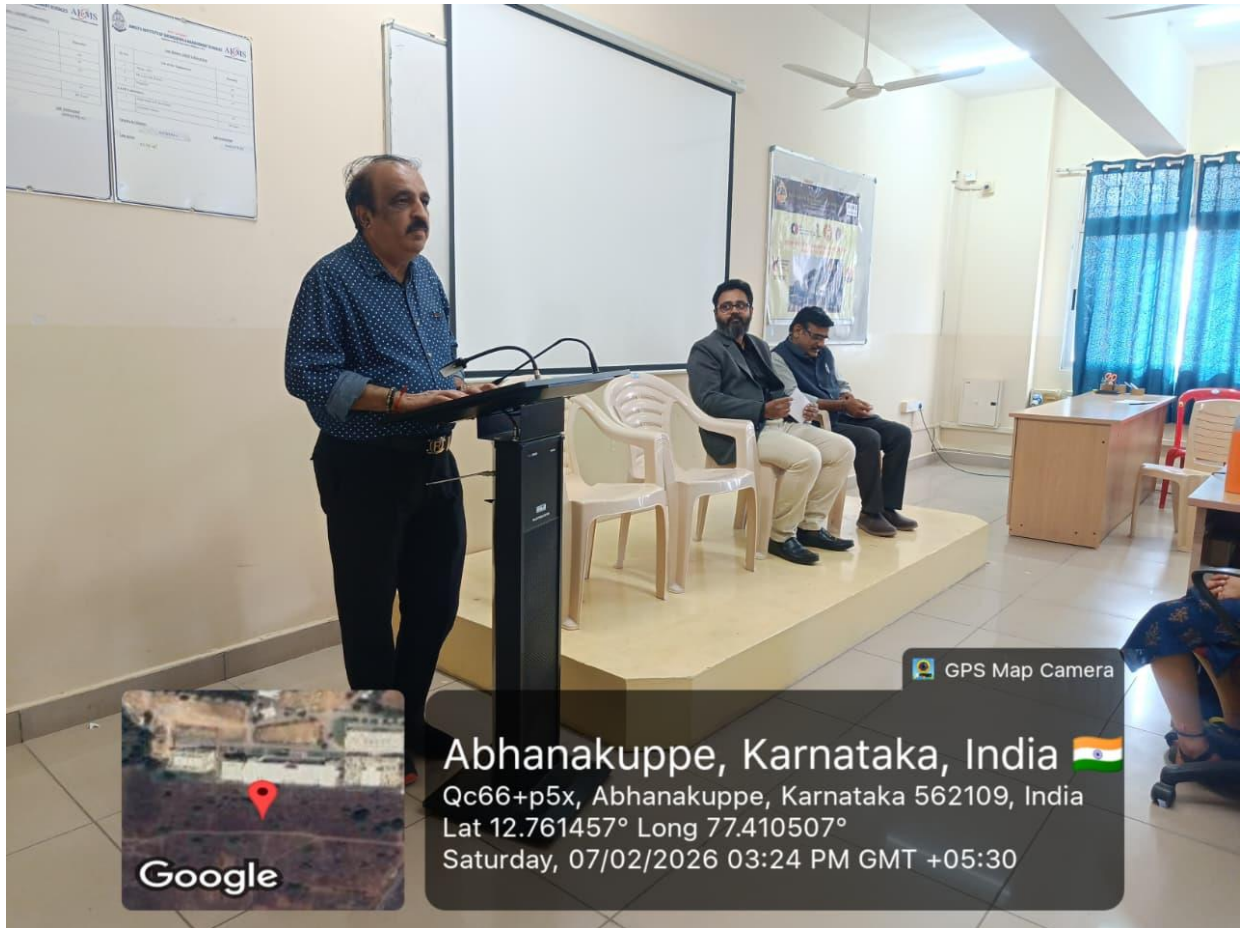
The final day of the workshop was dedicated to **Neural Networks** and advanced model building techniques. The session provided an in-depth understanding of how neural networks learn from data and improve performance over time.

The following activities were conducted:

- Detailed explanation of Neural Networks and their applications
- Designing neural network architectures for different problems
- Building and training neural network models using TensorFlow
- Hyperparameter tuning for performance improvement
- Model validation and performance evaluation

Students successfully built **two AI models** by applying Machine Learning, Deep Learning, and Neural Network concepts. An assessment was conducted at the end of the day to evaluate students' understanding of both theoretical and practical aspects.







BENEFITS OF THE WORKSHOP

The workshop provided multiple benefits to students, including:

- Improved programming and analytical skills
 - Practical understanding of AI and ML workflows
 - Awareness of sustainable and green computing practices
 - Exposure to industry-relevant tools and technologies
 - Confidence in building AI-based models
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LEARNING OUTCOMES

By the end of the workshop, students were able to:

- Apply Green Skills in software development
 - Develop Python programs for real-world problems
 - Implement Machine Learning and Deep Learning models
 - Design and train Neural Network models
 - Analyze and evaluate model performance
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CONCLUSION

The four-day workshop proved to be a highly valuable learning experience for the students of the ISE Department. Under the expert guidance of **Mr. Raghunandhan M S**, students gained in-depth knowledge of Python programming, Machine Learning, Deep Learning, and Neural Networks while also understanding the importance of Green Skills.

The combination of theoretical concepts, practical implementation, and assessment ensured effective learning. The workshop successfully enhanced students' technical competence and prepared them for future challenges in Artificial Intelligence and sustainable computing.

HOD

DEAN ACADEMICS

PRINCIPAL