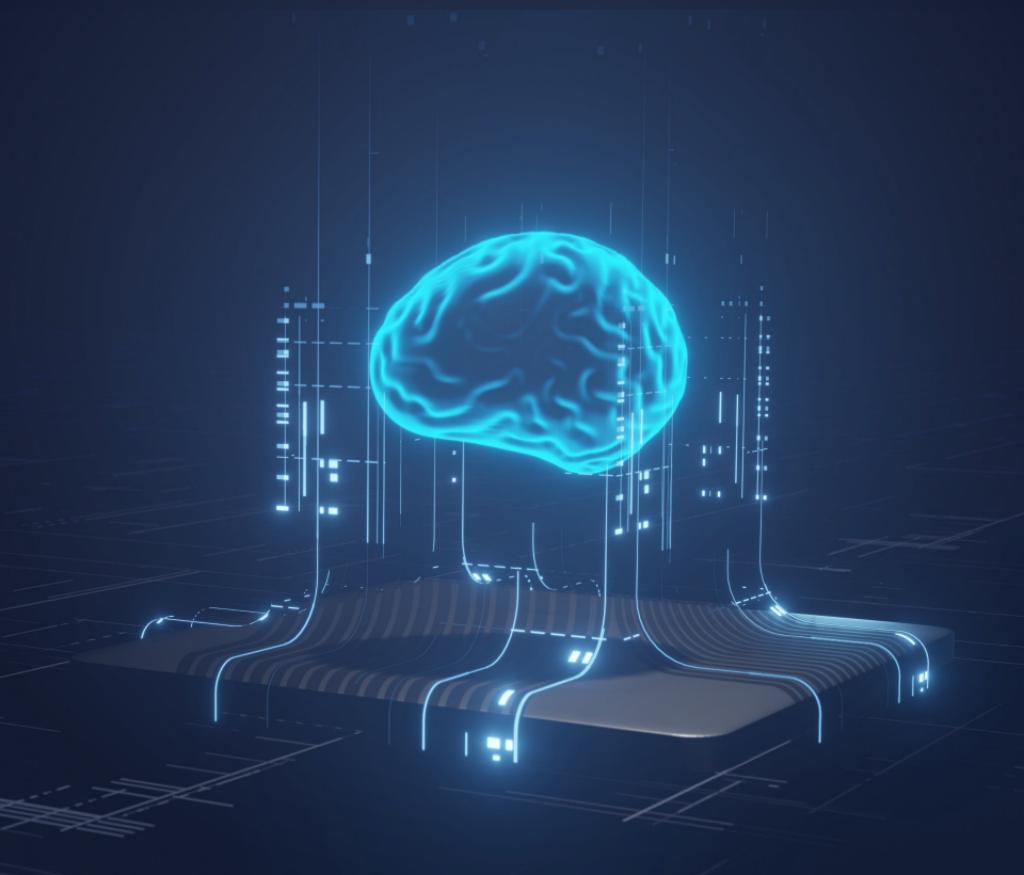


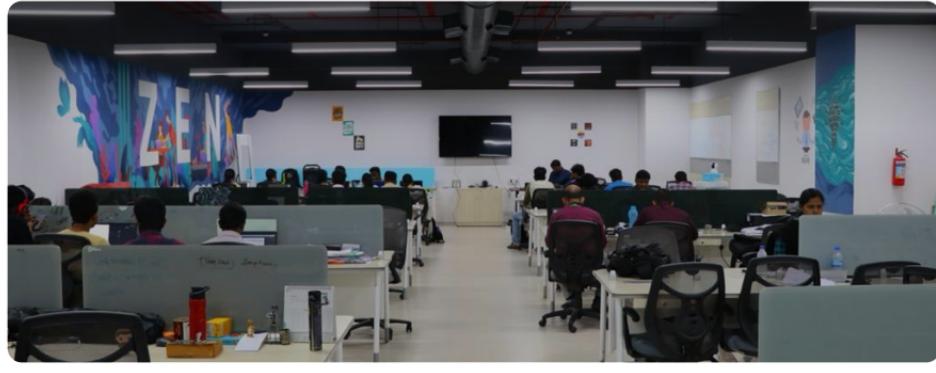
IITM Pravartak certified

Artificial Intelligence & Machine learning Course

5-Months **LIVE** Weekend Program
with Placement Guidance



About GUVI



GUVI is India's first Vernacular EdTech platform of its kind. GUVI stands for 'Grab Ur Vernacular Imprint', dedicated to making technical education accessible and effective by breaking down language barriers. Our pioneering EdTech company is incubated by India's premier institutions, ensuring the highest standards of quality and innovation. We aim to make a significant impact in the field of tech upskilling, opening doors for learners across India to acquire valuable technical skills in their vernacular languages. By democratizing tech education online through prominent partnerships with Google-for-Education, UiPath, NASSCOM, & AICTE, GUVI has made it possible to impart job-ready tech skills to the ambitious aspirants.

About IIT-M Pravartak

IITM Pravartak Technologies Foundation is a section 08 company housed within the Indian Institute of Technology Madras, operates as the Technology Innovation Hub on Sensors, Networking, Actuators, and Control Systems (SNACS), funded by the Department of Science and Technology, Government of India, under its National Mission on Interdisciplinary Cyber-Physical Systems. Dedicated to preparing India's youth for the forefront of technological advancement, our core activities include technology development, entrepreneurship development, human resource development, and international collaboration. By fostering an ecosystem that integrates academia, industry, government, and international organizations, IIT-M Pravartak facilitates the translation of fundamental research into practical products, driving innovation and shaping the future of technology.

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About the Co-Founders



Sridevi

Co – Founder at GUVI

20+ years of Technical Expertise

 **PayPal Honeywell** & more

Tech Women Entrepreneur who was selected
For Google Developers' Launchpad Program



Arun Prakash

CEO & Founder at GUVI

20+ years of Technical Expertise

 **PayPal Honeywell**  Symantec

& more

Built 7 Products from Scratch Mentored 1000+
students Hosted 200+ sessions & 25+ webinars



Bala Murugan

Co – Founder at GUVI

17+ years of experience with IT industry

 **PayPal**

Technologist with 9+ years of Entrepreneurial
experience & Member of the Syllabus Sub-
Committee at Anna University

IITM Pravartak certified Artificial Intelligence and Machine Learning course

GUVI's Zen Class offers the leading edge course: IIT-M Pravartak Certified AI with ML Program that guides you to become an Artificial Intelligence & Machine Learning Expert in just 6 Months. The goal of this course is to help Students/working professionals such as developers, data scientists & engineers to gain knowledge of Machine Learning models & AI techniques. Equip yourselves with the job-ready skills required to implement core concepts like Data transformation, AI knowledge & ML algorithms in your work through our project-based & vernacular upskilling approach.

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200+ Hiring Partners



360+ Best Industry
Experts

Placement Guidance

Pre-Program Phase

Candidate



Book a Seat with ₹8000
(100% Refundable)



Attend Pre-Program Session



Take Assessment



If Selected



Proceed to AI and Machine Learning
Program



₹89,999(Course Fee) – ₹8000(Booking
Fee) = ₹81,999(Remaining Fee)



If not selected/Interested



Immediate Refund of ₹8000

IITM Pravartak certified Artificial Intelligence and Machine Learning course

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Live Online Classes



Hands-on Industry Projects



Technical Mentorship by Industry Experts



Practise on Coding Practise
Platform – CodeKata



Live Cumulative test & Mock Interviews



Proceed to Placement Guidance

Top skills you'll learn!

- ✓ Use Python & SQL to access and analyze data from several different data resources.
- ✓ Build predictive models using a variety of supervised & unsupervised ML algorithms.
- ✓ Learn how to create context based generative responses with AI
- ✓ Dive deep into Deep Learning using PyTorch.
- ✓ Optimize, tune, and improve algorithms according to specific metrics like accuracy and speed.
- ✓ Understand the basics of image & gesture recognition using variations of Recurrent neural network (RNN) Convolution Neural Networks. (CNN).
- ✓ Compare the performance of learned models using suitable metrics.

Technologies covered



Python



SQL



Data Visualization



Matplotlib



Plotly & Seaborn



Deep Learning



PyTorch



Natural Language Processing



Computer Vision



Jupyter Notebook



Artificial Intelligence

Program Curriculum

Module-0: AI for everyone

This will be a part of the preboot session, where we will talk about basic AI and how it is being used in industries. Moreover, we will shed some light on the applications of Deep Learning.

- ✓ What is AI?
- ✓ The terminology of AI
- ✓ The power of Machine Learning in the current era
- ✓ The limitations of Machine Learning
- ✓ A soft introduction to Deep Learning
- ✓ Some cool applications of Deep Learning

Module-1: Introduction to Artificial Intelligence and current trends

We will formally introduce AI and the current industry practices. We will discuss how to build and deploy state-of-the-art AI products.

- ✓ Introduction to AI
- ✓ Machine Learning basics
- ✓ Workflow of a Machine Learning projects
- ✓ Introduction to Deep Learning and difference between ML and DL
- ✓ Inducing AI using ML and DL
- ✓ How to choose an AI project?

Module-2: Introduction to Python

We will go through the basics of python with all essential beginner friendly concepts of python programming like datatypes, loops, data structures and functions, followed by assessments and assignments

- ✓ Python – Basic
- ✓ Why python ?
- ✓ Python IDE
- ✓ Hello World Program
- ✓ Variables & Names
- ✓ String Basics
- ✓ List
- ✓ Tuple
- ✓ Dictionaries
- ✓ Conditional Statements
- ✓ For and While Loop
- ✓ Functions
- ✓ Numbers and Math Functions
- ✓ Common Errors in Python

Module-3: Introduction to Python (Advanced)

Since we have essential basics of python we will see some advanced concepts like comprehensions, file handling, regular expressions, object oriented programming, pickling and many more essential concepts.

- ✓ Python – Advanced
- ✓ Functions as Arguments
- ✓ List Comprehension
- ✓ File Handling
- ✓ Debugging in Python
- ✓ Class and Objects
- ✓ Lambda, Filters and Map
- ✓ Python PIP
- ✓ Iterators
- ✓ Pickling
- ✓ Python JSON
- ✓ Python API and web scraping

Module-4: Introduction to Pandas for Data Handling

Since we need to handle huge amounts of data, we will be implementing data handling techniques with Pandas library. And we will explore the different miscellaneous functions of Pandas library in detail.

- ✓ Introduction to Pandas
- ✓ Series Data Structure – Querying and Indexing
- ✓ DataFrame Data Structure – Querying, Indexing, and loading
- ✓ Merging data frames
- ✓ Group by operation
- ✓ Pivot table
- ✓ Date/Time functionality
- ✓ Example: Manipulating DataFrame

Module-5: Introduction to SQL

We will dive into the SQL-based databases. We will understand the problems with file-based systems and how databases can overcome those challenges. We will learn the basics of SQL queries, schemas, and normalization.

- ✓ Data Modeling
- ✓ Normalization, and Star Schema
- ✓ ACID transactions
- ✓ Select, insert, update & delete (DML and DQL)
- ✓ Join operations
- ✓ Window functions (rank, dense rank, row number etc)
- ✓ Data Types, Variables and Constants
- ✓ Conditional Structures (IF, CASE, GOTO and NULL)
- ✓ Integrating python with SQL

Module-6: Exploratory Data Analysis with Python

It is always needed to analyze the data and preprocess it , since the real world data is not always industry ready, so in this week we will be dealing with a lot of data cleaning and Exploratory data Analysis techniques which is a very crucial stage for any data science project

- ✓ Structured vs Unstructured Data
- ✓ Common Data issues and how to clean them
- ✓ Textual data cleaning
- ✓ Meaningful data transformation (Scaling and Normalisation)
- ✓ Handling missing data
- ✓ Outlier detection and correction
- ✓ Example: EDA on Movies DataSet

QUESTION

Module-7: Data Visualisation in Python (Matplotlib, Seaborn)

Data Visualization is used to understand data in visual context so that the patterns , trends and correlations in the data can be understood. We will do a lot of visualization with libraries like Seaborn, Matplotlib etc in turn that leads to effective storytelling.

ANSWER

- ✓ Read Complex JSON files
- ✓ Styling Tabulation
- ✓ Distribution of Data – Histogram
- ✓ Box Plot
- ✓ Pie Chart
- ✓ Donut Chart
- ✓ Stacked Bar Plot
- ✓ Relative Stacked Bar Plot
- ✓ Stacked Area Plot
- ✓ Scatter Plots
- ✓ Bar Plot
- ✓ Continuous vs Continuous Plot
- ✓ Line Plot
- ✓ Line Plot Covid Data

ANSWER

Module-8: Machine Learning Refresher

We will cover the basics of Machine Learning and connect the use cases in the domain of Machine Learning with Artificial Intelligence.

- ✓ What is ML and how is it related to AI?
- ✓ Predictive Modeling
- ✓ Correlation
- ✓ Basics of regression
- ✓ Ordinary least squares
- ✓ Simple linear regression
- ✓ Model building
- ✓ Model assessment and improvement
- ✓ Diagnostics
- ✓ Multiple linear regression (model building and assessment)
- ✓ Random forest & decision tree

Module-9: Machine Learning Continued

We will cover more advanced concepts in ML.

- ✓ Classification
- ✓ Logistic regression
- ✓ K nearest neighbours
- ✓ Clustering
- ✓ K means
- ✓ Dimensionality reduction methods
- ✓ Principal component analysis and its variants
- ✓ Linear Discriminant Analysis
- ✓ Support vector machine

Module-10: Introduction to Neural Networks

Given the fundamental understanding of basic regression algorithms, we will now deep dive into the Neural Networks. We will learn the basic unit of neural networks and will slowly learn to create a network.

- ✓ A single neuron details
- ✓ The XOR problem and introduction to multi-layer perceptron
- ✓ Understanding the output & Activation Functions
- ✓ Derivatives of Activation Functions
- ✓ Gradient Descent for Neural Networks
- ✓ Backpropagation Algorithm
- ✓ Understanding Computational graph
- ✓ Backpropagation using computational graph
- ✓ Random initialization

Module-11: Deep Neural Networks

After having the basic understanding of neural networks, we will look into deep neural networks and try to understand how to learn complex functions.

- ✓ Deep L-layer Neural Network
- ✓ Forward Propagation in a Deep Network
- ✓ Building Blocks of Deep Neural Networks
- ✓ Forward and Backward Propagation
- ✓ Parameters vs Hyperparameters
- ✓ Parameters learning and hyperparameters tuning

Module-12: Applied Deep Learning with Pytorch

We will dive into the practical aspects of deep learning using PyTorch. We will learn the basic terminologies and their significance. Moreover, we will learn how to implement neural networks in PyTorch.

- ✓ Understanding the learning aspect of neural networks
- ✓ PyTorch basics
- ✓ Tensor and Datasets in PyTorch
- ✓ Linear Regression in PyTorch
- ✓ Multiple Input Output Linear Regression
- ✓ Softmax Regression
- ✓ Shallow Neural Networks
- ✓ Splitting the data (train/test/dev)
- ✓ Understanding Bias and Variance
- ✓ Understanding overfitting
- ✓ Using regularization
- ✓ Regularization techniques (like dropout)

Module-13: Applied Deep Learning with Pytorch Continued

We will learn normalization and other related concepts. Moreover, we will look into the problems like vanishing gradient

- ✓ Implementing Deep Networks
- ✓ Convolutional Neural Network (Convolution, Activation Functions and Max Polling, Multiple Input and Output Channels, GPU in PyTorch)
- ✓ Normalizing Inputs
- ✓ Vanishing / Exploding Gradients
- ✓ Weight Initialization for Deep Networks
- ✓ Numerical Approximation of Gradients
- ✓ Gradient Checking
- ✓ Gradient Checking Implementation

Module-14: Introduction to Computer Vision with Convolution Neural Networks

We will introduce computer vision and will try to understand how deep learning can help us perform various tasks.

- ✓ What is a CV? (understanding with examples)
- ✓ Edge detection with examples
- ✓ Padding
- ✓ Strided Convolutions
- ✓ Convolutions Over Volume
- ✓ One Layer of a Convolutional Network
- ✓ Simple Convolutional Network Example
- ✓ Pooling Layers
- ✓ CNN Example

Module-15: Natural Language Processing with Neural Networks

Given the idea about Computer Vision with Deep Neural Networks, now we will understand another use case, which is NLP with deep learning.

- ✓ Deep learning architectures for sequence processing
- ✓ Recurrent neural networks
- ✓ Managing context in RNNs and its drawbacks
- ✓ Introduction to LSTMs and GRUs

Module-16: Natural Language Processing with Neural Networks continued

After having the basic understanding of deep learning architecture for language models, we will now look into more complex architectures.

- ✓ Self Attention Networks: Transformers
- ✓ Introduction to Encoder-Decoder models
- ✓ Encoder-Decoder with RNNs
- ✓ Attention and Beam search
- ✓ Encoder and Decoder with Transformers
- ✓ Transfer Learning through Fine-Tuning

Module-17: Introduction to LLMs and prompt Engineering

Given the overall context of transformer models and transfer learning, now we will discuss the architecture of Large Language Models and how to write efficient prompts.

- ✓ Introduction to Large Language Models
- ✓ Description of GPT-3 and chatGPT architecture
- ✓ Application of LLMs in various fields (Life sciences, Legal Languages, etc.)
- ✓ Basic description of other LLMs

Module-18: Prompt Engineering using OpenAI

We will now dive deeper into the prompt engineering and discuss the effective ways of using OpenAI API.

- ✓ Introduction to GPT 3.5 & 4 api's
- ✓ Introduction & importance of Prompt Engineering
- ✓ Prompting Guidelines
- ✓ Outcomes of Prompt Engineering – Iterative learning, Summarizing, Inferring & Expanding
- ✓ Interactive ChatBot
- ✓ Application to summarize & identify the sentiment of customer feedback given to an e-commerce website

Final Projects

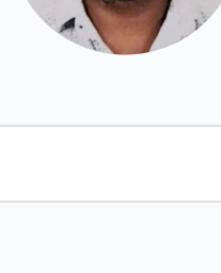
- ✓ Image segmentation using DNNs
- ✓ Gesture recognition using DNNs
- ✓ Building NER for pharmaceutical dataset
- ✓ Building and deploying Question Answering system with Hugging Face
- ✓ Face detection using Neural Style Transfer
- ✓ Loan Status Prediction

Instructors

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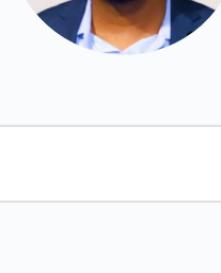
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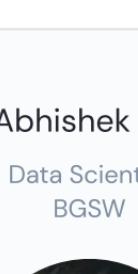
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Research Head
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Harshvardhan Palawat

Machine Learning Engineer
InfoObjects Pvt Ltd



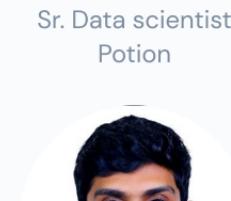
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Data Scientist - II
Captain Fresh



Abhishek S R

Data Scientist
BGSW



Mr Koushik Krishnan

Quant Trader
Independent Trading Desk



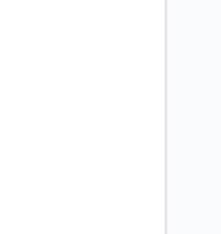
Jeshurun Edward

Sr. Data scientist
Potion



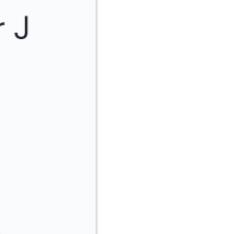
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Data Science Consultant
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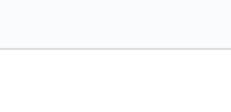
Chandnika R

Member of Technical
Staff III –Verizon India



Jasmine Jeniffer J

Data Scientist
Accenture



Who can take this course?

- ✓ Students pursuing degrees in computer science, engineering, mathematics, statistics, or related fields can upgrade their skill set with AI & ML
- ✓ Working professionals from different industries who wish to transition careers into AI and ML-related roles
- ✓ Anyone with a keen interest in upgrading their future with AI & ML skills

Program Details

PROGRAM DURATION AND FORMAT

5-Months Weekend

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