BOSTON INSTITUTE OF ANALYTICS

GLOBAL LEADER IN PROFESSIONAL TRAINING PROGRAMS

DUAL CERTIFICATE PROGRAM IN

DATA SCIENCE & ARTIFICIAL INTELLIGENCE



#1 INTERNATIONAL TRAINING INSTITUTE

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Boston Institute of Analytics - Empowering Minds, Transforming Futures.

As the world's top ranked advanced training institute, Boston Institute of Analytics imparts training to students and working professionals via classroom training conducted by industry experts. With training campuses across US, UK, Europe and Asia, BIA® has training programs across the globe with a mission to bring quality education in emerging fields. BIA® courses are designed to train students and professionals on industry's most widely sought after skills, and make them job ready in today's rapidly evolving world.

Boston Institute of Analytics stands as the pinnacle of global excellence in education, boasting three distinguished schools that cater to the diverse and evolving demands of the professional landscape.

The BIA® School of Technology & AI offers a spectrum of courses ranging from Data Science to Cyber Security, ensuring students are equipped with cutting-edge skills in the rapidly advancing field of technology. The BIA® School of Management provides comprehensive courses in disciplines such as Investment Banking, Financial Analytics, and Business Management, shaping future leaders with a strategic and forward-thinking mindset. For those aspiring to enter the creative industries, the BIA® School of Animation & Design offers courses in Animation, Gaming, Fashion Analytics, VFX, and more, fostering innovation and artistic expression. BIA® School of Media and Communications has range of in-demand courses spanning across journalism, advertising, english communications and public speaking to equip students to thrive in today's ever-evolving media and communications landscape. BIA® School of Scholars has an array of engaging courses tailored for young minds in the K-12 age group, covering a spectrum from abacus, animation, AI, robotics to foreign languages, preparing the young minds for the hyper competitive world of tomorrow.

BIA's influence extends across the globe with a network of 85+ campuses, creating a truly international learning environment. At the heart of its success is the commitment to delivering training by industry experts, ensuring that students receive real-world insights and practical knowledge. BIA's immersive classroom interactive format enhances the learning experience, allowing students to engage actively with the material and collaborate with peers. As the global leader in these specialized courses, BIA® continues to shape the future of professionals, empowering them to thrive in their chosen fields.

BIA® has been consistently ranked number one international training institute by Business World, British Columbia Times, Business Standard, Avalon Global Research, IFC and Several Recognized Forums. Boston Institute of Analytics classroom training programs have been recognized as industry's best training programs by global accredited organizations and top multi-national corporates.





Global Leader in Professional Training Programs

7+
COUNTRIES

105+
CAMPUSES

350+
GLOBAL CORPORATE
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TRAINING HOURS COMPLETED

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CYBER SECURITY & ETHICAL HACKING



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Key Highlights



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Courses designed and developed by top industry professionals.



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HDFC BANK	CRISIL	haptik	TOUBS	wework
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And Many More...



Learning Path





Mode of Learning



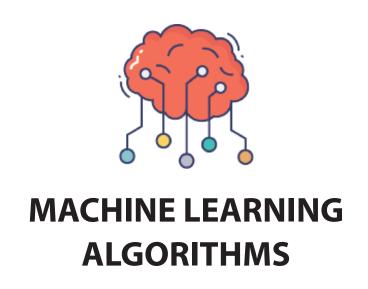
BIA[®] has a **CLASSROOM** + **ONLINE** training pattern where students have the flexibility to attend the sessions IN CLASSROOM as well as ONLINE. BIA[®] Trainers conduct the training sessions live from BIA[®] Classrooms. All BIA[®] sessions are live streamed for students from that batch, thus enabling students to attend the same sessions ONLINE and interact with the Trainer as well as other students.



Skill-Sets Covered

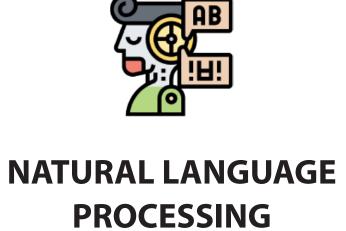












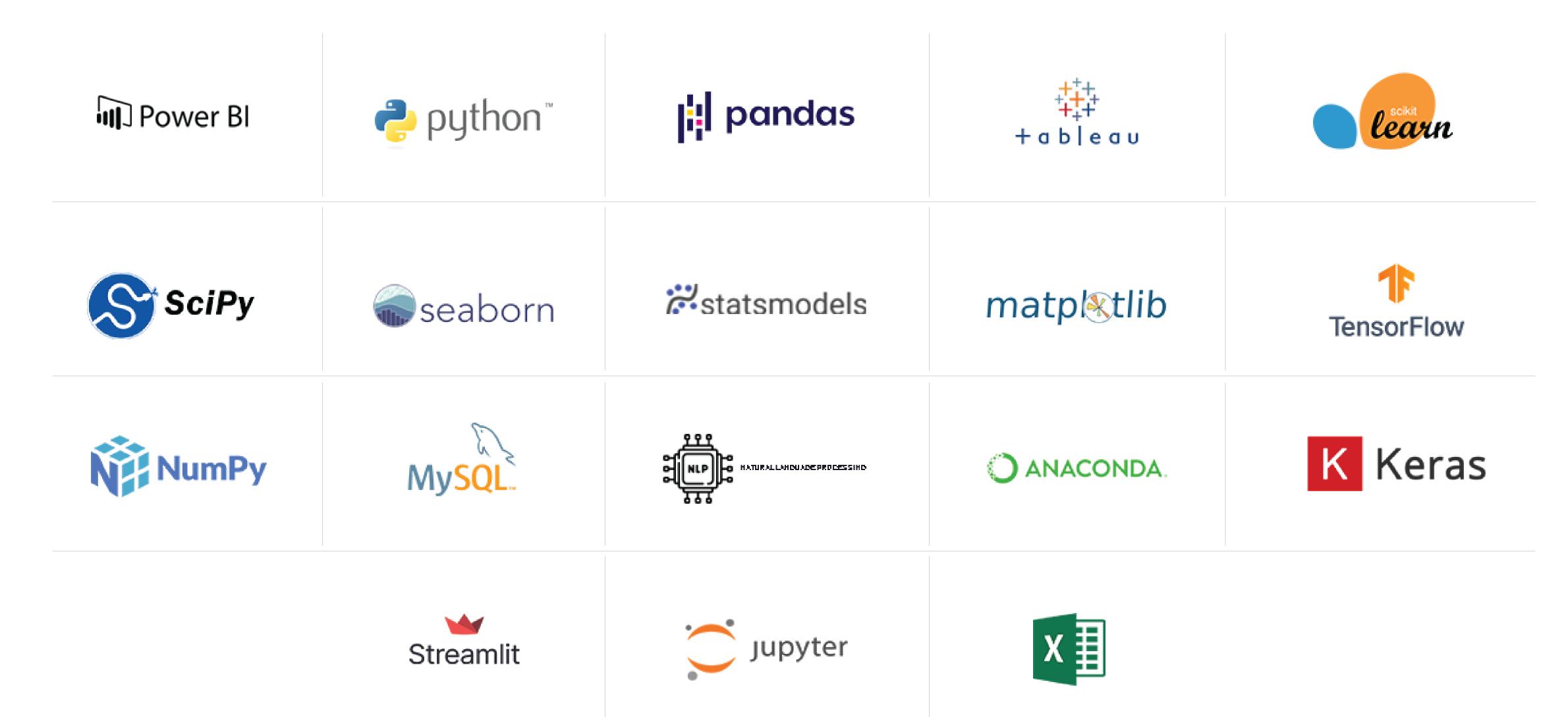




GENERATIVE AI



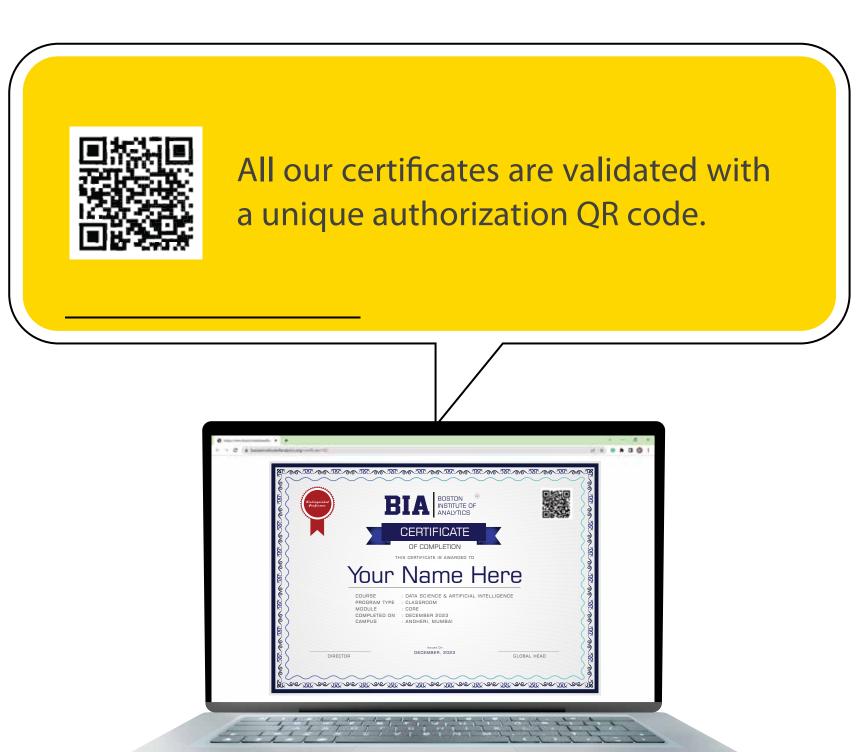
Tools & Technologies







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Know Your Future As Data Science & Artificial Intelligence Professional

Job Roles You Can Apply For

DATA SCIENTIST

MACHINE LEARNING ENGINEER

DEEP LEARNING ENGINEER

DATA MINING SPECIALIST

AI/ML MODEL VALIDATOR

AI RESEARCH SCIENTIST

DATA ANALYST

DATA VISUALIZATION SPECIALIST

AI PRODUCT MANAGER

AI CHATBOT DESIGNER

BIG DATA ENGINEER

AI CONSULTANT

QUANTITATIVE ANALYST

AIOPS SPECIALIST

NLP ENGINEER

COMPUTER VISION ENGINEER

BUSINESS INTELLIGENCE
ANALYST

CONVERSATIONAL AI DEVELOPER

ALGORITHM DEVELOPER

AI SOLUTION ARCHITECT

And Many More...



DUAL CERTIFICATION

IN TWO MOST IN-DEMAND AND HIGHLY PAID SKILLS

DATA SCIENCE



ARTIFICIAL INTELLIGENCE







CORE MODULE

Embrace the future of Data Science and AI with this comprehensive program, combining the best of both worlds: essential Data Science knowledge and in-demand Generative AI (Gen AI) skills. This Data Science and AI course features special capstone projects, guest sessions from industry experts, masterclasses, and live BIA® DoubtBuster sessions.



4 Months

(100 HOURS WEEKEND COURSE)

DIPLOMA6 Months

(100 HOURS WEEKEND COURSE) + (2 MONTHS PROJECT INTERNSHIP)

MASTER DIPLOMA 10 Months

(100 HOURS WEEKEND COURSE) + (6 MONTHS ON-JOB TRAINING AS DATA ANALYST)

WELCOME & COURSE OVERVIEW

- Introduction to the Course
- Importance of Data Science and Al

KEY CONCEPTS OVERVIEW

- Fundamentals of Data Science
- Introduction to Artificial Intelligence

COURSE EXPECTATIONS AND STRUCTURE

- Overview of the Course Modules
- Brief on Assignments and Assessments

SOFTWARE INSTALLATION GUIDANCE

- Installing Anaconda
- Setting up Jupyter Notebooks
- Setting-up Power BI and Tableau Account
- Introduction to Excel Environment

FUNDAMENTALS OF EXCEL

- Overview of Excel Interface
- Key Formulas and Functions
- Ranges and Tables
- Data Cleaning Text Functions, Dates and Times
- Conditional Formatting
- Sorting and Filtering

INTRODUCTION TO LEARNING ENVIRONMENT

- Digital Platforms and Resources
- Communication Channels

ADVANCE EXCEL

- Pivots
- Data Analysis in Excel Trends and Patterns
- Data Visualization in Excel Charts and Plots
- Working With Multiple Worksheets
- Linking and Referencing the Data Between Worksheets



LOOPS, FUNCTIONS & ERROR HANDLING

- Loop Control Statements: Break, Continue and Pass
- Defining and Calling Functions
- Function Parameters and Return Values
- Scope of Variables (Global and Local)
- Advanced Functions
- Default Values and Variable-Length Arguments
- Recursive Functions
- Map, Reduce and Filter
- Introduction to Exceptions
- Try, Except and Finally Blocks
- Handling Common Errors
- Hands-on Activity

FUNDAMENTALS OF PYTHON

- Overview of Python
- Understanding Statements, Expressions and Indentation
- Overview of Identifiers, Keywords and Comments
- Variables: Declaration, Assignment and Naming
- Conventions
- Common Data Types: Integers, Floats and Strings
- Type Casting and Conversion
- Operators in Python
- Hands-on Activity

DATA STRUCTURE: DICTIONARY & SETS

- Basic Operations on Dictionaries
- Manipulating Dictionaries
- Dictionary Comprehension for Concise Creation
- Creation of Sets
- Manipulating Sets
- Common Operations on Both Dictionaries and Sets
- Hands-on Activity

INTRODUCTION TO NUMPY

- Intro To Numpy and Creating Numpy Array
- Basic Operations on Arrays
- Indexing and Slicing
- Reshaping, Stacking and Splitting
- Iteration, Filtering and Boolean Indexing
- Image Processing Using Numpy and Matplotlib
- Hands-on Activity

DATA STRUCTURE: LIST AND TUPLE

- Basic Operations on Lists
- Demonstration of List Manipulation Techniques
- Slicing and Indexing in Lists
- List Comprehension for Concise and Readable Code
- Tuples Creation
- Basic Operations on Tuples
- Slicing And Indexing in Tuples
- Common Operations on Both Lists and Tuples
- Hands-on Activity

INTRODUCTION TO PANDAS & DATA VISUALIZATION

- Data Structure in Pandas
- Creating Dataframe and Loading Files
- Data Exploration (EDA)
- Creating and Saving Basic Plots Using Matplotlib
- Creating Statistical Plots Using Seaborn
- Exploring Relationships in Data: Pair Plot and Heat Map
- Hands-on Activity



INTRODUCTION TO SQL & QUERYING

- SQL and Its Significance
- SQL'S Role in Data Retrieval and Manipulation
- Select Statement for Data Retrieval
- Retrieving Specific Columns and All Columns
- Using Distinct to Remove Duplicates
- Data Models & ER Diagrams
- Relational Vs. Transactional Models
- Organizing Data in Tables
- Filtering Data with Where Clause
- Sorting Data with Order By
- Limiting Results with Limit
- Using Aliases for Column Names
- Hands-on Activity

INTRODUCTION TO MACHINE LEARNING (ML) & REGRESSION

- Intro to ML & Its Role in Data Analysis
- Types of Machine Learning Supervised,
- Unsupervised and Reinforcement
- Data Pre-processing Methods
- Feature Scaling
- Linear Regression as Regression Technique
- Simple Linear Regression
- Hands-on Activity

ADVANCED SQL CONCEPT & DATA MANIPULATION

- Creating and Using Temporary Tables
- Adding Comments to SQL Code for Documentation
- Introduction to Data Modeling
- Designing A Database Schema
- Sorting Data with Order By (Advanced)
- Advanced Filtering (With In, Or, And, Not)
- Performing Mathematical Operations on Data
- Introduction to Aggregate Functions (Count, Sum, Avg, Max, Min)
- Grouping Data with Group By
- Filtering Grouped Data with Having
- Understanding Subqueries and Their Types
- Performing Join Operations (Inner Join, Left Join, Right Join, Full Outer Join)
- Updating and Deleting Data with SQL
- Analyzing Data with Statistics
- Hands-on Activity

FUNDAMENTALS OF STATISTICS & PROBABILITY

- Define Statistics and Its Importance
- Explain The Types of Data: Categorical and
- Numerical
- Inferential and Descriptive Statistics
- Measure Of Central Tendency: Mean, Median, Mode
- Measure Of Dispersion: Variance and Standard
- Deviation
- Probability Basics, It's Rules and Notation
- Probability Distribution Discrete and Continuous
- Normal Distribution and Properties
- Central Limit Theorem and Its Importance
- Skewness and T-Distributions

ADVANCED STATISTIC & HYPOTHESIS TESTING

- Hypothesis Testing Null and Alternative
- Significance Level (Alpha) and P-Value
- One-Sample and Two-Sample T-Test
- Visualization Plots for Data Exploration
- Interpretation of Visualization
- Correlation and Regression
- Confidence Interval
- Hypothesis Testing With Z-Test
- Chi-Square Test for Categorical Data
- One-Way and Two-Way Anova



MULTIPLE LINEAR REGRESSION & MODEL EVELUATION

- Model Evaluation Metrics for Regression
- Mean Absolute Error (MAE)
- Mean Squared Error (MSE)
- Root Mean Squared Error (RMSE)
- R-Squared (Coefficient of Determination)
- Multiple Linear Regression
- California Housing Dataset Model Evaluation
- Hands-on Activity

DECISION TREES & ENSEMBLE METHODS

- Decision Tree and Its Structure
- Decision Nodes and Leaf Nodes, Parent/Child Node
- Splitting Criteria Gini Impurity and Entropy
- Tree Pruning and Overfitting
- Techniques to Prevent Overfitting
- Random Forest Ensemble Learning and Bagging
- Gradient Boosting And AdaBoost Ensemble
- Method
- Hands-on Activity

UNSUPERVISED LEARNING

- K-Means Clustering and Its Applications
- K-Means Algorithm
- Choosing the Number of Clusters (K)
- Introduction to Hierarchical Clustering
- Agglomerative Hierarchical Clustering
- Hands-on Activity

LOGISTIC REGRESSION & CLASSIFICATION METRICS

- Overview of Logistic Regression
- Binary Classification Problem and Logit Function
- and Odds Ratio
- Binary & Multi-class LR
- Classification Matrix: Accuracy, Precision, Recall and
- F1-Score
- Confusion Matrix Interpretation
- ROC Curves & AUC
- Hands-on Activity

MODEL EVALUATION & VALIDATION TECHNIQUES

- K-Fold Cross-Validation for Model Evaluation
- Hyper-parameter Tuning Using Grid Search
- Detailed Coverage of Classification Metrics
- Precision, Recall, F1-Score, ROC Curves, AUC
- Interpretation and Practical Usage
- Hands-on Activity

SUPPORT VECTOR MACHINES (SVM) & K-NEAREST NEIGHBORS (KNN)

- Classification and Regression with SVM
- The Concept of Margin and Support Vectors
- Kernel Trick for Non-Linear Data
- Introduction to KNN
- Predictions of KNN Based on Nearest Neighbors
- Euclidean Distance, Manhattan Distance and Other
- Distance Metrics
- Choosing the Value of K
- Hands-on Activity



TIME SERIES MODELING WITH ARIMA & SARIMA

- Understanding Time Series Data
- ARIMA Model and Its Components
- Building ARIMA Models
- Forecasting with ARIMA
- Seasonal ARIMA (SARIMA) Model and Its
- Components
- Building and Forecasting with SARIMA
- Model Evaluation and Tuning
- Hands-on Activity

INTRODUCTION TO DEEP LEARNING

- Overview of Artificial Neural Networks (ANNs)
- Neural Network Basics
- Model Representation in Deep Learning
- Deep Learning Applications
- Training Deep Learning Models
- Building A Simple Artificial Neural Network
- Hands-on Activity: ANN
- Convolutional Neural Networks (CNNs)
- Hands-on Activity: CNN

DEEP LEARNING ARCHITECTURES & TRAINING

- Recurrent Neural Networks (RNNs)
- Recurrent Neurons
- Vanishing Gradient Problem
- LSTM and GRU
- Building and Training RNN
- Overfitting and Regularization Techniques
- Dropout and Normalization
- Model Evaluation, Metrics and Hyper-parameter
- Techniques
- Hands-on Activity: RNN, LSTM, GRU

INTRODUCTION TO NATURAL LANGUAGE PROCESSING (NLP)

- Overview of NLP
- Challenges in NLP
- Key NLP Tasks
- Text Preprocessing in NLP
- NLP Libraries and Frameworks
- Feature Extraction and Representation
- Building A Text Classification Model
- Hands-on Activity

ADVANCED NLP TECHNIQUES

- Advanced Word Embeddings
- GLOVE (Global Vectors for Word Representation)
- N-Grams
- Recurrent Neural Networks (RNN)
- Long Short-Term Memory (LSTM)
- GRU
- Hands-on Activity

DATA SCIENCE PROJECT - 1

- Introduction Data Science Workflow
- Data Collection
- Exploratory Data Analysis (EDA) and Visualization
- Data Preprocessing
- Machine Learning Model Development
- Introduction to Model Deployment
- Model Deployment Using Streamlit



DATA SCIENCE PROJECT - 2

- Understanding Time Series Data
- ARIMA Model and Its Components
- Building ARIMA Models Components
- Building and Forecasting with SARIMA
- Model Evaluation and Tuning
- Hands-on Activity

INTRODUCTION TO GENERATIVE AI, TRANSFORMERS & LLMS

- Overview of Generative AI
- Definition and Key Features of Generative Models
- Applications of Generative Al Across Various Industries
- Ethical Considerations and Potential Biases in Generative Al
- Architecture Overview: Transformers and Their Key Components
- Pre-Training and Fine-Tuning of LLMs
- Comparison of Different LLM Models (GPT-3, T5, Jurassic-1 Jumbo)
- Introduction to Hugging Face and Text Generation/Summarization
- Setting Up the Environment and Accessing Hugging Face
- Exploring Pre-Trained LLM Models and Functionalities
- Implementing Text Generation Tasks Using Transformers and LLMs
- Experimenting With Text Summarization Techniques with LLMs
- Analyzing the Strengths and Limitations of Different Approaches
- Hands-on Activity

MASTERING POWER BI

- Introduction to Power BI, Key Features, Installation and Setup
- Understanding the Power BI Desktop Interface
- Exploring the Workspace: Ribbons, Panes and Menus
- Data Transformation
- Data Modeling: Relationships, Keys and Hierarchies
- Data Analysis Expressions (DAX), DAX Functions and Calculations
- Advanced DAX Calculations: Time Intelligence, Filters and Measures
- Charts and Page Layouts
- Creating A Power BI Dashboard
- Publishing and Sharing Reports and Dashboards
- Hands-on Activity

MASTERING TABLEAU

- Overview of Tableau Prep
- Data Connections, Cleaning and Transformation
- IntroductionTableau Desktop
- Data Source Connection and Navigation
- Visual Analytics Sorting and Filtering Data Interactivity
- Working with Calculated Fields
- Aggregations and Level of Detail (LOD) Expressions
- Creating Charts and Dashboards in Tableau
- Hands-on Activity

TRAINING & FINE-TUNING LLMS

- Fine-Tuning LLMs for Specific Tasks
- Dataset Preparation and Pre-Processing Techniques
- Fine-Tuning Hyper-parameter Optimization
- Evaluating the Performance of Fine-Tuned Models (Bleu and Rouge)
- Introduction to Retrieve, Augment and Generate (RAG) for Fine-Tuning
- Hands-On: Fine-Tuning A LLM with Custom Data
- Selection of LLM Models and Dataset
- Fine-Tuning with Hugging Face Libraries
- Evaluating and Analyzing the Fine-Tuned Model's Performance
- Comparison of Results with The Pre-Trained Model
- Hands-on Activity



ADVANCED FINE-TUNING & MODEL EVALUATION

- Advanced Fine-Tuning Techniques
- Prompt Engineering and Its Impact on Generated Text
- Exploring Techniques Like Beam Search and Nucleus Sampling
- Conditional Text Generation Based on Specific Contexts
- Text-To-Speech and Speech-To-Text Integration with Hugging Face
- Model Evaluation Techniques
- Going Beyond Bleu and Rouge: Exploring Advanced Metrics for Different Tasks
- Qualitative Analysis of Generated Text and Summarization Outputs
- Importance of Human Evaluation in Generative Models
- Hands-on: Fine-Tuning with Advanced Techniques and Text-To-Speech/Speech-To-Text
- Experimenting with Prompt Engineering and Advanced Generation Techniques
- Implementing Conditional Text Generation Based on Specific Contexts
- Integrating Text-To-Speech and Speech-To-Text Functionalities
 Evaluating the Performance of Fine-Tuned Models Using
 Advanced Metrics

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BUILDING A REAL-LIFE CHATBOT WITH GRADIO DEPLOYMENT

- IReal-World Applications of Generative Al
- Case Studies of Successful LLM Applications in Various Industries
- Identifying New Opportunities for Generative AI Solutions
- Ethical Considerations and Responsible Deployment Practices
- Designing and Developing a Chatbot
- Defining the Chatbot's Functionalities and Target Audience
- Integrating Fine-Tuned LLM Models for Text Generation,
 Dialogue, and Text-To-Speech/Speech-To-Text
- Building the Chatbot Interface and User Interaction Flow
- Implementing and Deploying the Chatbot With Gradio
- Testing and Evaluating the Chatbot

- Project and Dataset Assignment by Capstone Mentor
- Orientation Session by Capstone Mentor Project Expectations

CAPSTONE PROJECT ALLOCATION, MENTORSHIP & PRESENTATION

- Mentorship Session by Capstone Mentor Doubt Resolutions
- Project Presentation

SOFT SKILLS TRAINING

- Presentation Skills
- Email Etiquettes
- LinkedIn Profile Building
- Personality Development and Grooming

INTERVIEW PREPARATION

- Interview Do's and Don'ts
- Mock Interviews
- HR And Technical Interview Prep
- One-On-One Feedback



Access to Global Network of BIA® Advisory Council



ASHWIN MALIK MESHRAM

Managing Director of a US-based machine learning company, specializing in algorithm development for financial services. IIT Bombay alumnus.

Specialities:

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Insurance, Retail, E-commerce, Banking, Asset Management



XI ZHAO

Co-leading the Financial Literacy Initiative at Boston Private Industry Council, Member of 'President's Council' at Boston Children's Museum, Teaches Investment course at Clark University, CFA® Charter Holder, Boston University alumnus.

Specialities:

Econometrics, Risk Modelling, Marketing Analytics **Domain Expertise:** Automobile, Banking, Insurance,



PETER VIOLA

VP of Product and Implementation at a US-based machine learning and artificial intelligence company; Majored in Physics from Tufts University.

Specialities:

Scenario Planning Algorithms, M & A Analytics, Operational Efficiency

Domain Expertise:

Insurance, Asset Management, E-commerce



MICHAEL AGHA

Advisor at SPARK research program at Stanford University, Ex- Global Brand Strategy at Intel, Ex-Oliver Wyman, Wharton alumnus.

Specialities:

Corporate Strategies, Marketing Analytics, Business Transformation

Domain Expertise:
Health Care & Life Sciences, Pharmaceutical,

Asset Management



JAMES KERLEY

Managing partner at US based business transformation company, Ex-CMO at LIMRA LOMA.

Specialities:

Sales Analytics, Marketing, Strategy

Domain Expertise:

Insurance, Finance, Wealth Management



TONY BORDON

Managing Director of a global company specializing in analytics and insurance-based software; Board member of The Boston Children's Museum and BUILD.ORG. Ex-president of Institutional Initiatives with The Princeton Review. Ex-COO of Riverdeep Inc.

Hard Tech

Specialities:

Marketing Analytics, Sales Strategies **Domain Expertise**:
Digital Media, Education,
Entertainment Publishing



NIRAV DAGLI

CEO of a predictive analytics and artificial intelligence company based out of Boston. Ex-Partner at Oliver Wyman.

Specialities

Financial Modelling, Algorithm Development, Predictive Analytics

Domain Expertise:

Banking, Insurance, Asset Management, Consumer Goods



RISHIKESH DESHPANDE

CEO of a marketing and research analytics firm. Consultant to Fortune 1000 companies.

pecialities:

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BIA® In Action









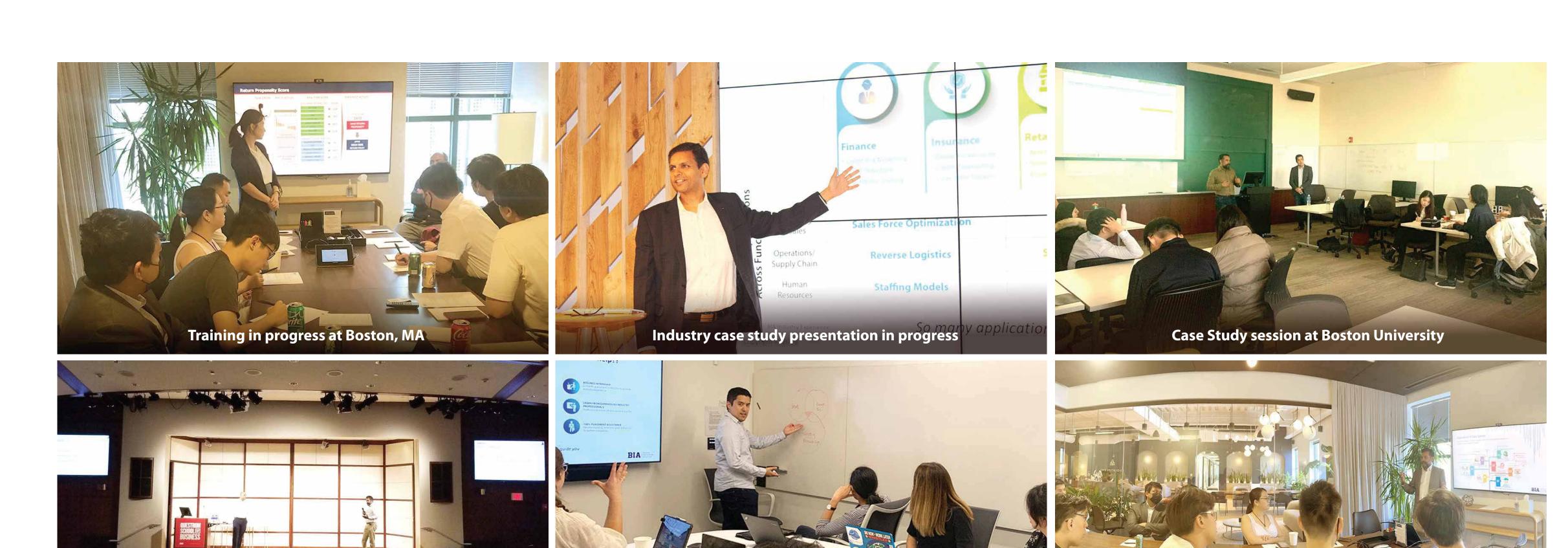






Case Study session at Boston University Questrom School of Business

BIA® In Action



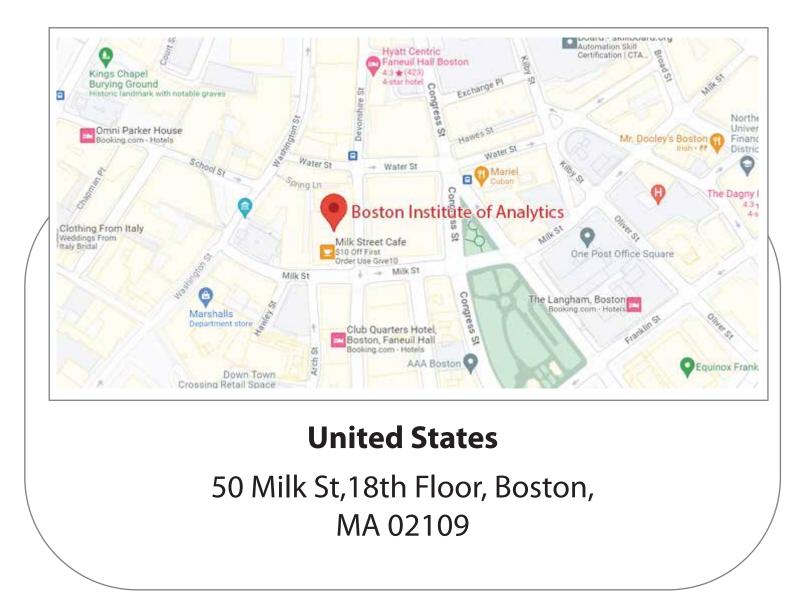
Training session in progress at Boston, MA

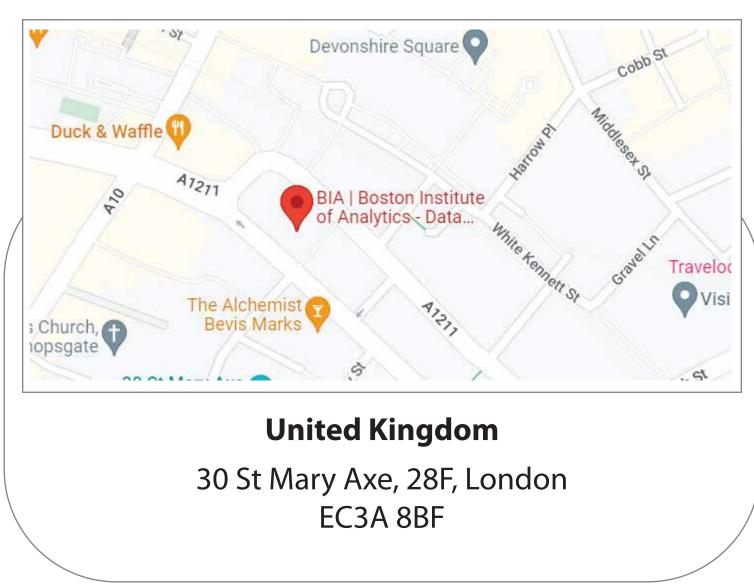
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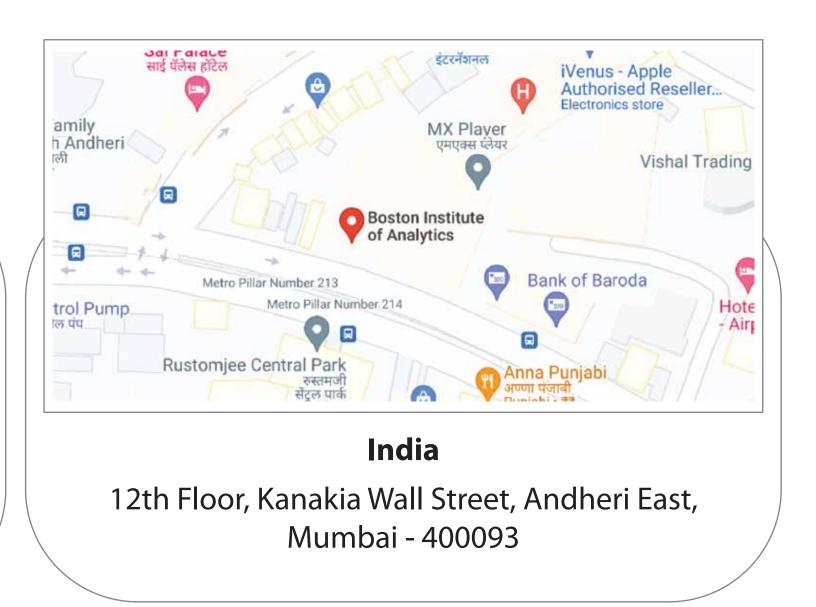


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