



Data Science with AI



Data Science with AI – Industry-Ready Program

(With Real-World Projects & Deployment)

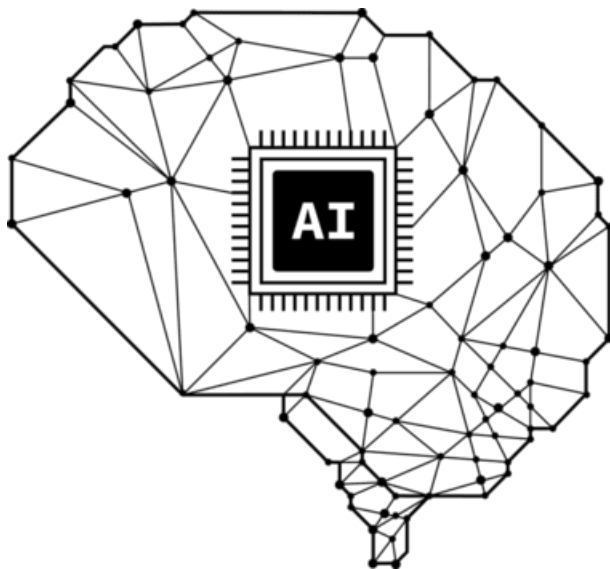
Duration: 10 Months.

The **Data Science with AI – Industry-Ready Program** is a comprehensive, hands-on training designed to take learners from foundational concepts to advanced, real-world **AI** applications. The program begins with Python programming, data collection, data cleaning, exploratory data analysis, statistics, feature engineering, and data visualization, including Power BI dashboards for business intelligence and storytelling. It then progresses into machine learning, covering supervised and unsupervised algorithms, model evaluation, and optimization techniques, followed by deep learning concepts such as ANN, CNN for image-based problems, RNN and LSTM for sequence and time-series data.

Learners also gain practical exposure to Natural Language Processing, chatbot development, and Generative AI, including prompt engineering techniques for effective use of large language models in analytics, automation, and reporting. The program further emphasizes Explainable AI (XAI) to ensure model transparency and responsible AI practices.

Deployment-focused modules introduce Streamlit for interactive AI applications, Git & GitHub for version control, Docker and Kubernetes for containerized deployment, and cloud computing basics for scalable AI solutions.

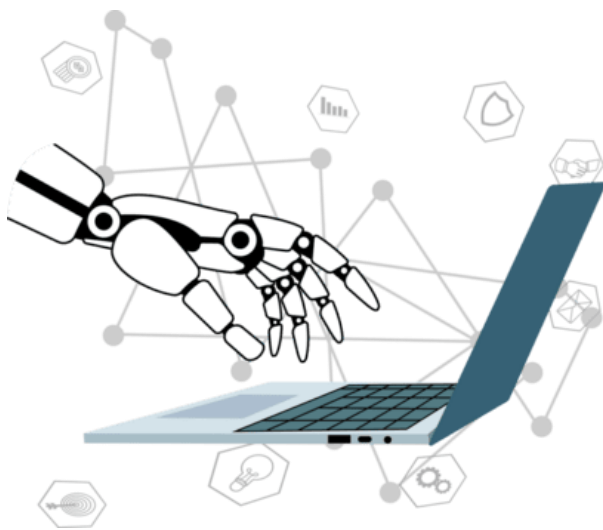
The training is strongly project-driven, featuring domain-based real-world projects (Healthcare, Finance, Retail) and a final industry-level capstone project covering the complete AI lifecycle—from problem definition to deployment and presentation. Comprehensive course material, short notes, tests, practice exercises, PPTs, videos, and reference books written by the mentor are provided throughout the program. It concludes with project documentation, viva/presentation, career readiness support, and an official certification issued by Brainwave AI, making participants industry-ready for data science and AI roles.



Why Training at Brainwave AI?

Training at Brainwave AI means learning AI, Data Science, and Analytics in a practical, industry-focused environment designed to make you job-ready. Brainwave AI is an ISO-certified training and development organization that emphasizes hands-on learning, real-world projects, and modern industry tools rather than only theory. Programs are carefully structured to cover AI, Data Analytics, Machine Learning, Deep Learning, NLP, Time Series, Generative AI, and deployment basics, aligned with current market demand.

Learners benefit from expert mentorship by highly qualified IT professionals with strong academic and industry experience, along with comprehensive course material, short notes, PPTs, practice tests, videos, and curated learning resources. Training includes domain-based projects, a major capstone project, and exposure to Power BI, Streamlit, GitHub, Docker, and cloud basics, helping build a strong portfolio. With added support for resume building, LinkedIn optimization, presentations, and certification, Brainwave AI ensures learners gain not just skills—but the confidence and readiness to succeed in real-world AI and analytics roles.



Contents

FOUNDATION LAYER

- ❖ **Introduction to Data Science, AI & Industry Applications**
AI, ML, DL, Generative AI overview, real-world use cases, and career pathways.
- ❖ **Python Programming for Data Science**
Python fundamentals, NumPy, Pandas, and data manipulation techniques.
- ❖ **Data Collection & Data Understanding**
CSV, Excel, JSON, APIs, and structured/semi-structured datasets.
- ❖ **Data Cleaning & Preprocessing**
Missing values, outliers, encoding, scaling, and transformations.

- ❖ **Exploratory Data Analysis (EDA)**

Statistical summaries and pattern discovery.

- ❖ **Data Visualization & Storytelling**

Matplotlib, Seaborn, insight-driven business storytelling.

ANALYTICS & BI LAYER

- ❖ **Statistics & Probability for Data Science**

Distributions, correlation, hypothesis testing.

- ❖ **Feature Engineering & Feature Selection**

Feature creation, transformation, dimensionality reduction.

- ❖ **Power BI for Data Analytics & Dashboards**

Data modeling, DAX basics, interactive dashboards, KPI reporting.

MACHINE LEARNING LAYER

- ❖ **Machine Learning Fundamentals**

ML workflow, train-test split, bias-variance tradeoff.

- ❖ **Supervised Machine Learning Algorithms**

Regression, classification, decision trees, ensemble models.

- ❖ **Unsupervised Learning Techniques**

Clustering, segmentation, pattern discovery.

- ❖ **Model Evaluation & Performance Metrics**

Confusion matrix, ROC-AUC, cross-validation.

- ❖ **Model Optimization & Hyperparameter Tuning**

Grid search, random search, model improvement.

DEEP LEARNING LAYER

- ❖ **Deep Learning Fundamentals**

Neural networks, activation functions, loss functions.

- ❖ **Artificial Neural Networks (ANN)**

Feedforward networks, backpropagation, optimization.

- ❖ **Convolutional Neural Networks (CNN)**
Image classification, feature extraction, real-world vision use cases.
- ❖ **Recurrent Neural Networks (RNN)**
Sequence modeling, time-dependent data processing.
- ❖ **Long Short-Term Memory (LSTM)**
Advanced sequence modeling for time series and text data.

NLP & CONVERSATIONAL AI LAYER

- ❖ **Natural Language Processing (NLP) Fundamentals**
Text preprocessing, tokenization, TF-IDF, embeddings.
- ❖ **Text Analytics & Sentiment Analysis**
Practical NLP applications on real datasets.
- ❖ **Chatbot Development**
Rule-based and AI-powered chatbots using NLP and LLMs.

GENERATIVE AI & PROMPT ENGINEERING

- ❖ **Generative AI Fundamentals**
Large Language Models (LLMs), generative concepts, use cases.
- ❖ **Prompt Engineering & Prompt Design**
Prompting techniques, zero-shot, few-shot, role-based prompting.
- ❖ **Applied Generative AI for Data Science**
Automated reports, insight generation, code assistance, productivity tools.

TIME SERIES & EXPLAINABILITY

- ❖ **Time Series Analysis & Forecasting**
Trend, seasonality, forecasting models and business use cases.
- ❖ **Explainable AI (XAI) Fundamentals**
SHAP, LIME, feature importance, responsible AI.

DEPLOYMENT, DEVOPS & CLOUD

Streamlit for AI & Data Science Applications

Interactive dashboards and ML app deployment.

Git & GitHub for Version Control

Project repositories and collaboration workflows.

Docker for AI/ML Deployment

Containerization, Dockerfiles, image building.

Kubernetes Fundamentals

Pods, services, scaling, orchestration basics.

Cloud Computing Basics for AI & Data Science

Cloud models, AI workloads, storage and compute services.

PROJECTS, DOCUMENTATION & CAREER

End-to-End Industry Project Workflow

Problem → data → model → deployment.

Documentation & Technical Report Writing

Project reports, PPTs, and technical documentation.

Final Industry-Level Capstone Project

Complete solution with model, app, and deployment.

Project Presentation, Viva & Review

Technical defense and evaluation.

Career Readiness & Portfolio Building

Resume, LinkedIn, GitHub portfolio, interview guidance.

Certification

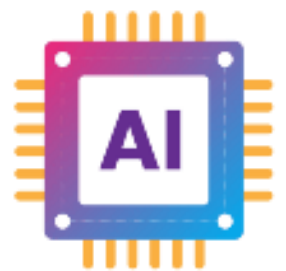
Program / Internship Completion Certificate issued by **Brainwave AI**.



Project List (With Real-World & Industry Applications)

➤ FOUNDATION & ANALYTICS PROJECTS

- ❖ **Exploratory Data Analysis (EDA) on Real-World Dataset**
Perform data cleaning, EDA, visualization, and insight generation.
- ❖ **Business Insights Dashboard Project**
Convert analytical findings into visual dashboards for decision-making.
- ❖ **Feature Engineering & Data Preparation Project**
Create optimized features to improve model performance.



➤ MACHINE LEARNING PROJECTS

- ❖ **House Price Prediction System**
Regression-based prediction using real-world housing data.

- ❖ **Customer Churn Prediction**

Classification model to predict customer retention and churn risk.

- ❖ **Credit Risk Assessment Model**

Predict loan default probability using supervised ML.

- ❖ **Customer Segmentation Using Clustering**

Unsupervised learning to group customers based on behavior.

- ❖ **Fraud Detection Using Anomaly Detection**

Identify unusual patterns in transaction datasets.

DEEP LEARNING PROJECTS

- ❖ **Image Classification Using CNN**

Build and train CNN models for image recognition tasks.

- ❖ **Handwritten Digit Recognition**

Deep learning-based digit recognition system.

- ❖ **Time Series Forecasting Using LSTM**

Forecast sales or demand using sequence models.

NLP & CONVERSATIONAL AI PROJECTS

- ❖ **Sentiment Analysis on Customer Reviews**

NLP-based sentiment classification on real text data.

- ❖ **Text Classification & Topic Modeling**

Categorize documents and discover hidden themes.

- ❖ **AI Chatbot Development**

Build an NLP/LLM-based chatbot for customer support or FAQs.

GENERATIVE AI PROJECTS

- ❖ **AI-Powered Report & Insight Generator**

Automated analytics summaries using Generative AI.

- ❖ **Prompt Engineering Optimization Project**

Design and evaluate prompts for data analysis and automation.

➤ XAI & MODEL OPTIMIZATION PROJECTS

- ❖ **Explainable AI Model Interpretation**
Apply SHAP/LIME to interpret ML model predictions.
- ❖ **Hyperparameter Optimization Project**
Improve model performance using Grid/Random Search.

➤ DEPLOYMENT & MLOPS PROJECTS

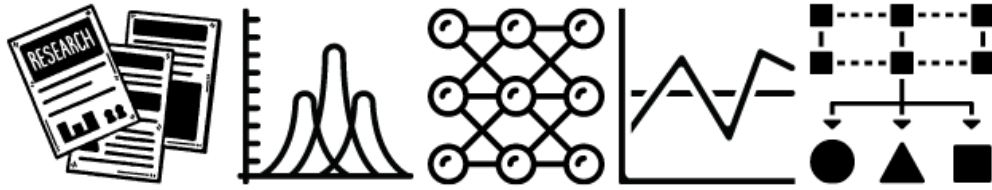
- ❖ **Streamlit-Based ML Application**
Deploy ML models as interactive web applications.
- ❖ **Dockerized ML Model Deployment**
Containerize ML applications using Docker.
- ❖ **Cloud-Based ML Deployment (Basic)**
Deploy models on cloud platforms using basic services.

➤ DOMAIN-BASED INDUSTRY PROJECTS

- ❖ **Healthcare Disease Prediction System**
Predict disease outcomes using healthcare datasets.
- ❖ **Retail Demand Forecasting System**
Forecast product demand using time series techniques.
- ❖ **Financial Market Trend Prediction**
Analyze and predict financial trends using ML/DL.

➤ CAPSTONE & PROFESSIONAL PROJECTS

- ❖ **End-to-End Industry-Level Capstone Project**
Complete AI solution: data → model → deployment → presentation.
- ❖ **Research Paper / Technical Report Project**
Documentation and research-style reporting of project outcomes.
- ❖ **GitHub Portfolio Project**
Maintain a professional GitHub repository with all projects.



AI Tools for Data Science



Tools & Technologies

Programming & Data Handling

- ❖ Python
- ❖ NumPy
- ❖ Pandas

Data Visualization & BI

- ❖ Matplotlib
- ❖ Seaborn
- ❖ Power BI (Desktop, DAX, Dashboards)

Statistics & Analysis

- ❖ SciPy
- ❖ Statsmodels



Machine Learning

- ❖ Scikit-learn

Deep Learning

- ❖ TensorFlow
- ❖ Keras
- ❖ PyTorch

Natural Language Processing (NLP)

- ❖ NLTK
- ❖ spaCy
- ❖ Transformers (Hugging Face)

Time Series Analysis

- ❖ Statsmodels (ARIMA, SARIMA)
- ❖ Prophet

Generative AI & Prompting

- ❖ Large Language Models (LLMs)
- ❖ Prompt Engineering Techniques
- ❖ AI-assisted analytics tools

Web Scraping & Data Collection

- ❖ BeautifulSoup
- ❖ Requests
- ❖ Selenium

Explainable AI (XAI)

- ❖ SHAP
- ❖ LIME

App Development & Deployment

- ❖ Streamlit
- ❖ Flask (basic exposure)

Version Control & Collaboration

- ❖ Git
- ❖ GitHub

Containerization & Orchestration

- ❖ Docker
- ❖ Kubernetes (Basics)

Cloud Basics

- ❖ Cloud Storage & Compute (AWS / Azure / GCP – concepts)

Development & Productivity

- ❖ Jupyter Notebook
- ❖ VS Code

Documentation & Reporting

- ❖ MS Word / Google Docs
- ❖ PowerPoint / Google Slides

Key Features

- Industry-Oriented Curriculum covering AI, ML, Deep Learning, NLP, Time Series, XAI, and MLOps
- Training by an ISO-Certified Organization – Brainwave AI
- Expert Mentorship by highly qualified IT professionals with academic and industry experience

- Comprehensive Course Material with concise short notes for quick learning and revision
- Regular Tests & Practice Tests to assess understanding and track progress
- Hands-On Coding & Practical Assignments using real-world datasets
- Short Learning Videos & Curated YouTube Resources for concept clarity
- Well-Structured PPT Presentations for every module
- Books & Reference Material Written by the Mentor for deeper insights
- Domain-Based Mini Projects (Healthcare, Finance, Retail, etc.)
- Major Industry-Level Capstone Project with end-to-end implementation
- Deployment Exposure using Streamlit, Docker, GitHub, and basic cloud concepts
- Presentation & Technical Defense to build confidence
- Resume & LinkedIn Profile Optimization for job readiness
- Official Internship Completion Certificate



Comprehensive Learning Resources & Study Support

Concise course material and notes will be provided by Brainwave AI to support structured learning, quick revision, and a clear understanding of all topics covered during the program. In addition to written notes, interns will receive practice exercises, regular tests and practice tests, short concept-explainer videos, curated YouTube learning links, and well-structured PPT presentations for each module. The learning resources are further enriched with reference books and study material written by the mentor, Bijay Chowdhury, ensuring strong conceptual clarity backed by real-world industry and academic experience. This blended approach helps interns learn effectively, revise faster, and apply concepts confidently in projects and assessments.



Mode of Training

- ❖ Offline
- ❖ Instructor-led sessions with hands-on practice

Eligibility

- ❖ Students from Undergraduate (UG) and Postgraduate (PG) programs are eligible, including B.Tech, M.Tech, BCA, MCA, B.Sc, and M.Sc from relevant disciplines.
- ❖ Freshers & career switchers
- ❖ Basic programming knowledge (for 45/90 days)

Learning Methodology

- ❖ Concept explanation + live coding
- ❖ Hands-on labs and assignments
- ❖ Case studies & real datasets
- ❖ Project-based learning approach

Assessment & Evaluation

- ❖ Module-wise tests
- ❖ Practice tests & quizzes
- ❖ Project evaluation
- ❖ Final assessment & presentation

Tools & Technologies Covered

- ❖ Python, NumPy, Pandas
- ❖ Matplotlib, Seaborn
- ❖ Scikit-learn
- ❖ Streamlit
- ❖ Git & GitHub
- ❖ Docker (for advanced program)

Project Deliverables

- ❖ Mini project / Major project (as per duration)
- ❖ GitHub repository submission
- ❖ Project report (PDF)
- ❖ Final presentation (PPT)

Certification Details

- ❖ Internship Completion Certificate
- ❖ Issued by Brainwave AI (ISO-Certified)
- ❖ Duration, project title, and mentor name mentioned

Career & Placement Support

- ❖ Resume & LinkedIn optimization
- ❖ Interview preparation guidance
- ❖ Career roadmap after internship



Mentorship & Support

- ❖ Guidance from experienced IT professionals
- ❖ Doubt-clearing sessions
- ❖ Continuous feedback on projects

Learning Resources

- ❖ Course material & short notes
- ❖ PPTs & practice worksheets
- ❖ Short videos & curated YouTube links
- ❖ Reference books written by the mentor



Mentor: Bijay Chowdhury

Bijay Chowdhury brings over 30 years of teaching and academic experience to the field of Artificial Intelligence and emerging technologies. As the Founder & Lead Mentor at Brainwave AI, he has dedicated his career to blending strong theoretical foundations with hands-on, lab-driven learning. He has published and written numerous research papers, contributed to theses and academic research, and authored multiple books on Artificial Intelligence and allied domains, making complex concepts accessible to students, educators, and professionals. His mentorship philosophy emphasizes ethical AI, real-world problem solving, project-based learning, and industry readiness, ensuring interns gain not only technical skills but also clarity, confidence, and long-term career direction in AI, Machine Learning, NLP, Generative AI, and Time Series Analytics.

Key Highlights

- ❖ 30+ years of teaching & academic mentoring
- ❖ Extensive research publications (papers, thesis)
- ❖ Author of multiple AI-focused books
- ❖ Strong focus on practical labs, projects, and ethics
- ❖ Proven mentor for student internships and career growth

For Further Details, Contact:



Brainwave AI – Training & Development Division

☎ **Phone:** +91-9828919909,7300051132

✉ **Email:** brainwaveudaipur@gmail.com , info@brainwaveindia.in

🌐 **Website:** www.brainwaveai.in

28, New Trimurty Complex, Hiran Magri, Sector-4, Udaipur-313002, Rajasthan

Artificial Intelligence | Machine Learning | Deep Learning | Analytics | Blockchain | IOT