GURU GOBIND SINGH
INDRAPRASTHA UNIVERSITY
NEW DELHI

SBIT TechMentors
Learn · Innovate · Lead

From Fundamentals to Future:

Your Pathway in AI and Deep Learning

PG Level Advanced Certification Programme in

ARTIFICIAL INTELLIGENCE & DEEP LEARNING

Transform Data into Intelligence with AI and Deep Learning

9 MONTHS PROGRAMME

Only NAAC A++ Govt University Programme	Offline and Online Classes	Mentoring by Industry Experts	IP University Alumni Status

Exclusively designed for professionals in Mathematics, Science or Engineering

Admission Helpline : 9560361410 | www.sbit.in/techmentors | techmentors@sbit.in

Are you looking for an exceptional Education Experience that will reignite your mind ?

A programme where Innovation and Learning by doing are the presiding principles ?

Then come to the Source
There's only one: SBIT TechMentors

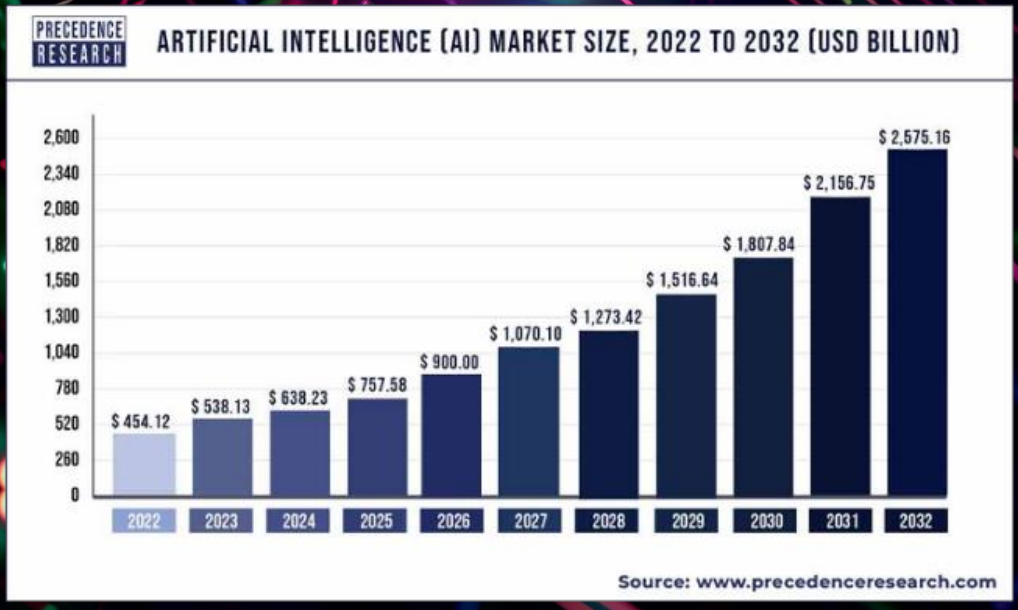

ACADEMIC BLOCK 1
SHRI RAM MURTI INSTITUTE OF TECHNOLOGY

Build Smart Systems. Build Your Career. Enroll in AI and Deep Learning !

> AI could contribute up to USD 15.7 trillion to the global economy by 2030
>
> pwc

> AI software spending will grow to USD 297.9 billion by 2027
>
> Gartner

> AI professionals are getting 60-80% hikes while switching jobs, compared with an average of 20-30% in other skill areas
>
> ET ECONOMIC TIMES.COM

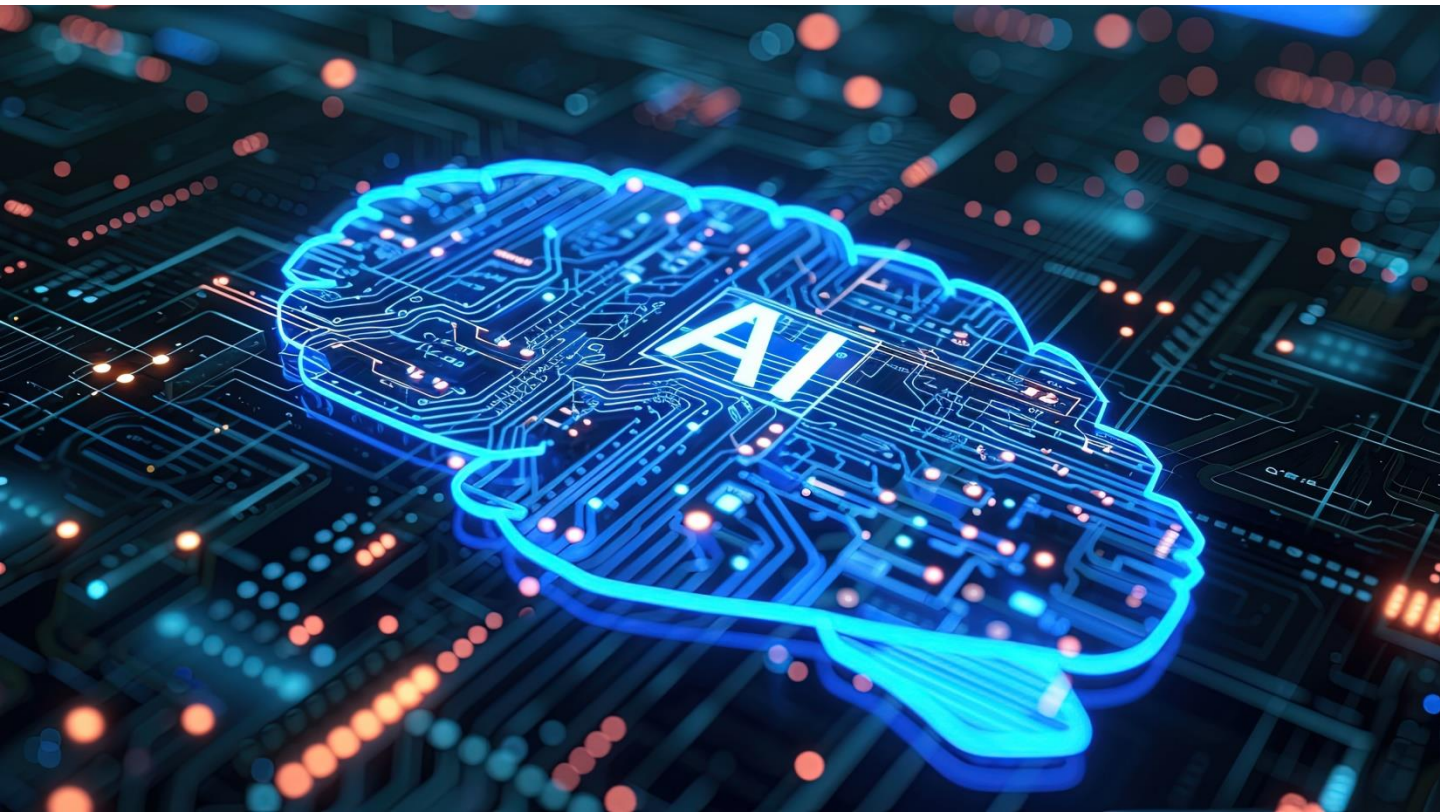


Trending Career Opportunities in Artificial Intelligence and Deep Learning

- Data Scientist
- Machine Learning Engineer
- Data Scientist
- Deep Learning Engineer
- AI Product Manager
- Computer Vision Specialist
- Robotics Engineer
- AI Ethicist
- AI Operations Specialist
- AI-Powered Healthcare Specialist
- AI-Powered Financial Analyst

About the Programme

- The Certification Course in Artificial Intelligence and Deep Learning is offered by SBIT TechMentors in collaboration with GGS IP University.
- The 9-months weekend programme enables both aspiring and practicing AI/ML professionals to build expertise in AI and Deep Learning.
- The programme covers the essential theoretical foundations of Deep Learning and teaches students how to apply them in the real world effectively.
- The course is best suited for individuals with programming knowledge who want to create a practical understanding of how Machine Learning algorithms can be developed and optimized for hardware.



Key Features of the Programme

Experienced Instructors
Learn from industry professionals with real-world experience

Flexible Formats
Choose from online, in-person, or hybrid classes

NAAC A++ Govt University Programme
Only NAAC A++ Govt University to offer such programmes

Ideal Duration
9 months of duration is ideal for getting solid foundation

Industry-Relevant Curriculum
Course designed in collaboration with industry experts

Experiential Learning
Hands-on projects with integrated labs

Easy access to faculty
Dedicated faculty hours to address doubts and questions

Industry relevant projects
Significant weightage on industry relevant projects

Mentoring from Industry veterans
Guidance on finer aspects of technologies and further learning

Career Assistance
Benefit from job placement assistance and resume workshops

Programme Outcomes

By participating in this programme, you will:

- Comprehend the principles of artificial intelligence and machine learning, including supervised and unsupervised learning techniques.
- Understand and apply foundational mathematical concepts relevant to AI and deep learning, including linear algebra, calculus, and probability.
- Gain proficiency in Python programming and utilize libraries essential for AI and data science, such as NumPy, pandas, and Matplotlib.
- Validate machine learning models and interpret various accuracy metrics.
- Design, build, and train neural networks from scratch using deep learning frameworks like TensorFlow or PyTorch.
- Explore and implement advanced deep learning architectures, such as convolutional neural networks (CNNs), recurrent neural networks (RNNs), and generative models.
- Apply deep learning techniques to real-world applications, including image recognition, natural language processing, and more.
- Conduct scientific and technical computations utilizing the SciPy package and its sub-packages, such as Integrate, Optimize, Statistics, IO, and Weave
- Complete a capstone project that demonstrates the ability to solve complex problems using AI and deep learning, showcasing practical skills and knowledge.

GGSIP University Edge

Guru Gobind Singh Indraprastha University (GGSIPU), established in 1998 by the Government of NCT of Delhi, is a leading public university recognized by the University Grants Commission (UGC). The university has been **accredited with an A++ grade by NAAC**, with a CGPA of 3.56, reflecting its commitment to academic excellence.

GGSIPU offers diverse professional programs across fields like Engineering, Management, Law, Medicine, and more, and focuses on fostering research and innovation. As a hub for higher education, GGSIPU provides students with quality education and opportunities for national and international exposure, preparing them for successful careers.

For more information, http://www.ipu.ac.in/

SBIT Advantage

Shri Balwant Institute of Technology (SBIT), established in 2006, is an AICTE approved Institute located in NCR Delhi and Affiliated with Guru Gobind Singh Indraprastha University (GGSIPU), New Delhi. SBIT offers full time undergraduate and postgraduate degree programmes in Engineering, Management and Computer Applications - B.Tech., BBA, MBA, BCA, MCA, B.Com.(H).

SBIT programmes are meticulously designed to equip students with the latest skills and knowledge, particularly in the high-demand fields of Artificial Intelligence (AI) and Deep Learning. Recognized among the Top 10 Colleges in India for AI, SBIT is renowned for its academic excellence and state-of-the-art infrastructure.

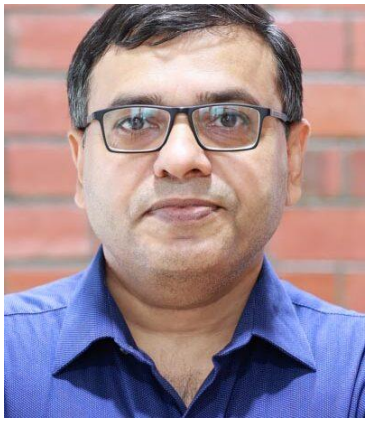
Over the last 19 years, SBIT has established a strong legacy of producing thousand of successful engineers and managers who have been placed in top companies like Apple, Amazon, TCS, and Deloitte across the globe. The Institute's rigorous academic programmes combined with hands-on industry training and corporate mentorship from global leaders, have ensured that students are not only technically proficient but also equipped with the skills to excel in the professional world.

Mentorship from Global Leaders

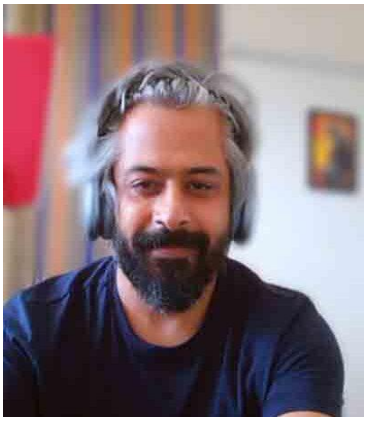
Gurpreet Sachdeva,
Senior Director, Capgemini

Nitin Gera, Co-founder
& COO, AiRo Digital Lab

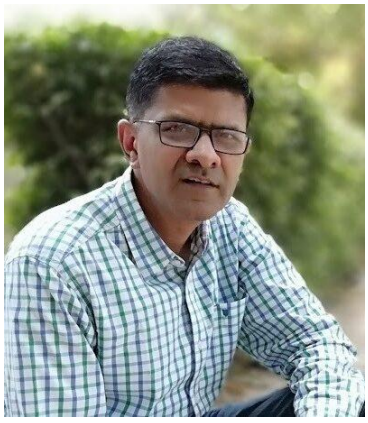
Mohit Saxena, Co-founder
& CTO, InMobi Group



Dr Mohit Bhatnagar, Assoc.
Prof., Jindal Global University



Himanshu Rai, Senior
Solutions Consultant, Google



Manish Gupta, DevSecOps
Community Leader, Thales

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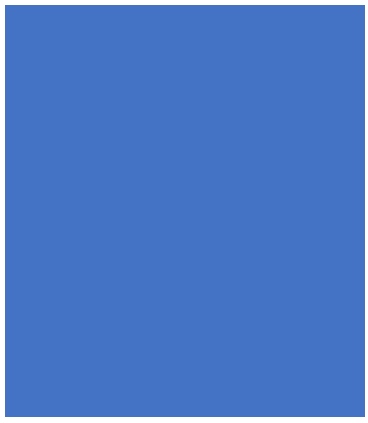

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Academic Council


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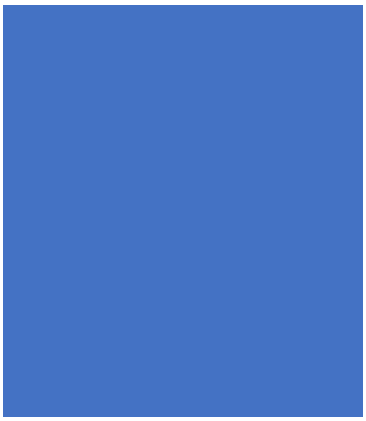
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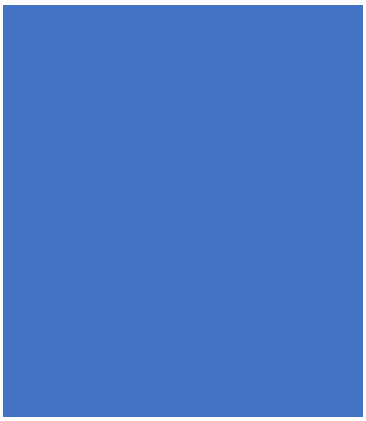
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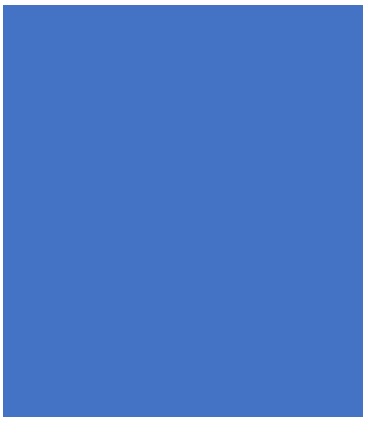
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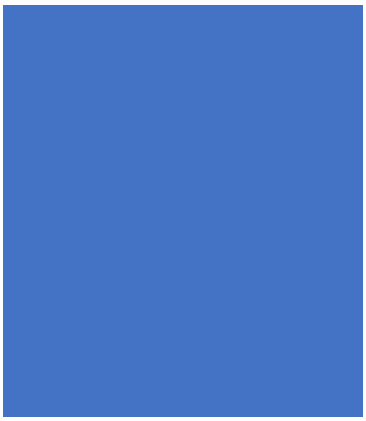
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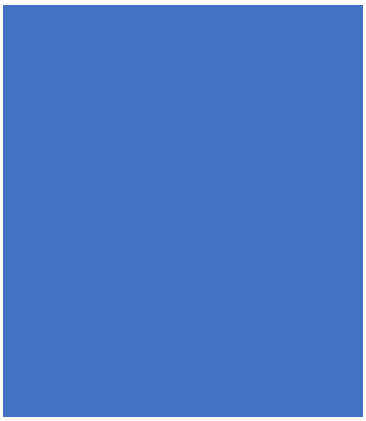
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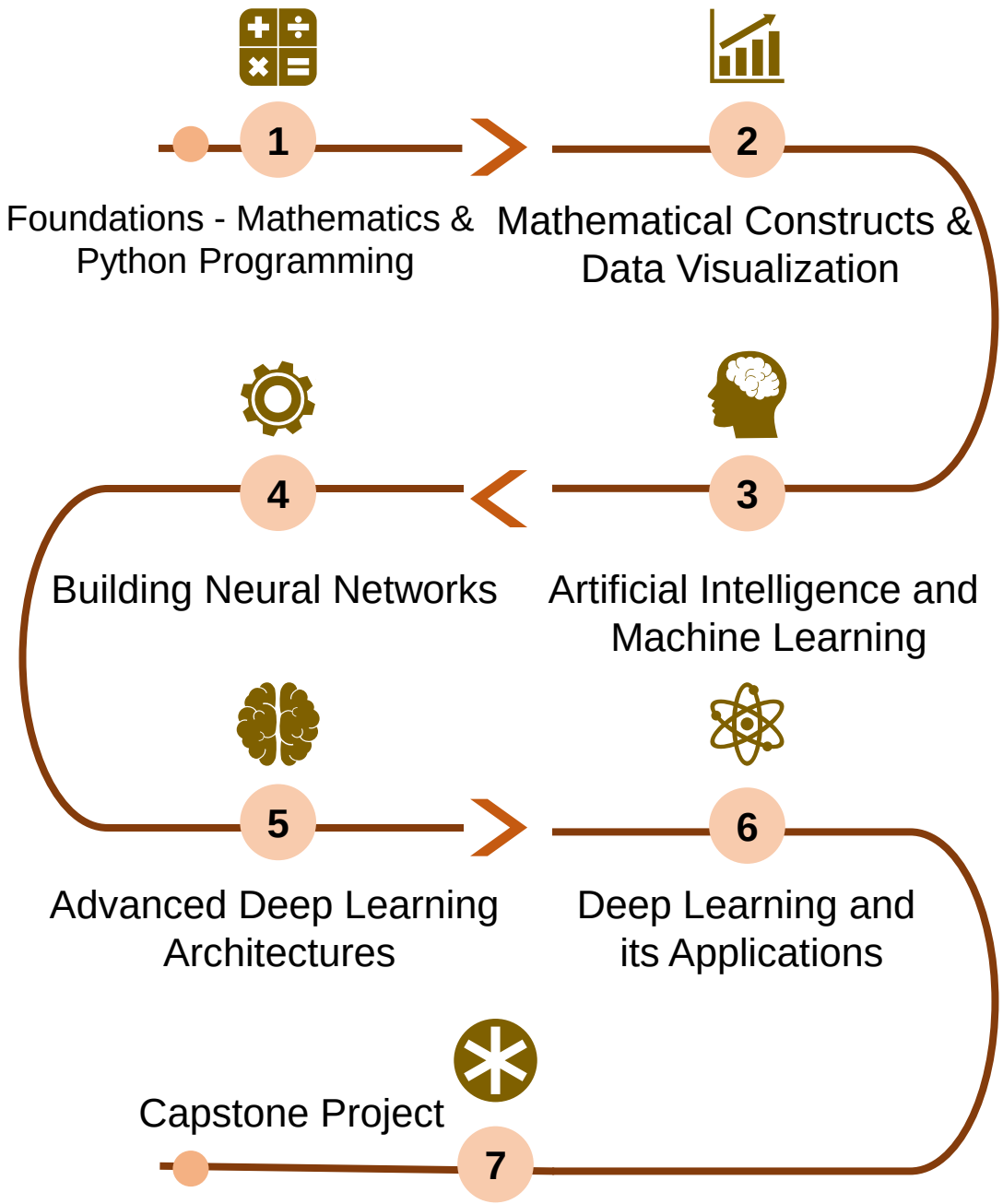
Shape Your Future

Benefit from a dynamic curriculum taught in a truly Competitive Environment.

At TechMentors You spend equal time learning the fundamentals of course and specializing in the upcoming areas. The program is unique, challenging, rigorous - and absolutely the right preparation for your future success.

Learning Path



Curriculum

A comprehensive curriculum that deep dives from foundational AI/ML to advanced deep learning architectures, building a solid grasp of concepts and applications.

Module 1: Foundations - Mathematics and Python Programming

This course builds essential AI and data science skills, covering basic mathematics, Python programming fundamentals, and object-oriented concepts. Learners gain expertise in data preprocessing, visualization, and Python libraries like NumPy, Pandas, and Scikit-learn. With hands-on practice in Google Colab, it bridges theory and practice for real-world applications.

- Overview of Google Colab environment for using Jupiter notebooks
- Understanding of basic mathematical concepts like Matrix, Calculus, and Probability
- Basic Python concepts like data types, operators, conditional statements, loops
- Apply Python concepts like strings, Lambda functions, and lists
- Understand Python concepts such as strings, lambda expressions, lists, functions, and error handling.
- Gain proficiency in Python libraries such as NumPy, pandas for handling data.
- Practical working of Pandas primary data structures: Series and DataFrame
- Data normalization and standardization using techniques like data binning
- Construct informative graphs using Matplotlib, Seaborn, and Plotly

Module 2: Mathematical Constructs and Data Visualization

This course builds a robust foundation in calculus, linear algebra, and statistics, essential for AI and machine learning. Topics include derivatives, gradient descent, matrix operations, and eigen decomposition, paired with probability and inferential statistics. Learners explore data visualization techniques, bridging theoretical concepts with practical analysis for insightful decision-making.

- Gain familiarity with linear algebra concepts
- Fundamentals of eigenvalues, eigenvectors, and eigen decomposition
- Comprehensive coverage in calculus, covering limits, derivatives, and integrals
- Differentiate between structured and unstructured data
- Overview of statistical measures such as means, medians, deciles, percentiles, modes, and quartiles
- Understand mean absolute deviation (MAD), standard deviation, and variance
- Fundamentals of probability concepts like independent and dependent events, Bayes' Theorem, sampling methods
- Introduction to hypothesis testing
- Data Stories and Data Visualization

Module 3: Artificial Intelligence and Machine Learning

This course introduces the AI/ML workflow and its real-world applications, covering key techniques like regression models for predictions, classification algorithms (Logistic Regression, Decision Trees, Random Forests), and boosting methods (XGBoost, Light GBM). It also includes unsupervised learning with clustering, anomaly detection, and association rule mining. Evaluation metrics ensure model accuracy and reliability.

- Overview of Artificial Intelligence landscape including workflows and applications
- Comprehensive coverage of different machine learning algorithms and their working
- Understand the difference between supervised and unsupervised learning and their respective real-world applications
- Coverage of different types of regression models and their applications
- Understanding of the concepts of overfitting and underfitting and how to prevent them
- Coverage of different types of classification algorithms and their applications
- Create correlation maps between variables
- Examine various ensemble modeling techniques such as bagging, boosting, and stacking
- Introduction to different machine learning frameworks like Keras and TensorFlow

Module 4: Building Neural Networks

This course focuses on creating and fine-tuning neural networks for regression and classification tasks. It covers Multi-Layer Perceptron (MLPs), backpropagation, and frameworks like PyTorch, TensorFlow, and Keras. Key topics include addressing gradient issues, using activation functions, batch normalization, dropout techniques, and optimizing learning rates with advanced optimizers for robust network performance.

- Understand the differences between deep learning and machine learning
- When to use deep learning and practical applications
- Comprehensive coverage of fundamental neural networks - Multi-Layer Perceptron (MLP)
- Gain expertise in the concepts of forward propagation and backward propagation in neural networks
- Introduction of modeling and performance improvement techniques in deep learning
- Understand hyperparameter tuning and model interpretability
- Overview of dropout and early stopping techniques and their implementation
- Understand the basics of PyTorch and learn how to create a neural network using PyTorch

Module 5: Advanced Deep Learning Architectures

This course dives into Convolutional Neural Networks (CNNs) for image processing, exploring architectures like U-net and ResNet. It covers Recurrent Neural Networks (RNNs) for sequence modeling, including LSTMs and GRUs. Topics extend to dimensionality reduction techniques like PCA and t-SNE, alongside advanced auto-encoder architectures for self-supervised learning and data representation.

- Extensive coverage of advance neural networks like Convolutional Neural Networks (CNN), and Recurrent Neural Networks (RNN)
- Overview of advanced concepts like filtering, convolution, pooling
- Introduction to advanced architectures like U-net, Resnet
- Architectures like GRU, LSM and corresponding gradient issues
- Building recommendation systems
- Overview of dimensionality reduction using different techniques like PCA, t-SNE, LLE
- Coverage of Auto-encoder architectures

Module 6: Deep Learning and its Applications

This course explores Natural Language Processing (NLP) techniques like tokenization, TF-IDF, and advanced models such as BERT and Generative AI frameworks like GPT and LangChain. It covers Speech and Audio Processing with end-to-end networks and recognition models and advances Computer Vision with transfer learning, object detection, and video captioning applications.

- Extensive coverage of Natural Language Processing including data preprocessing and key text preprocessing techniques
- Application text vectorization and embedding methods, Use TF-IDF for word importance in documents.
- Understand tokenization methods and Byte Pair Encoding (BPE)
- Explore attention mechanisms and BERT
- Learn about GPT and Large Language Models (LLMs)
- Use OpenAI API, ChatGPT, and Llama for NLP tasks
- Understand RAG and utilize LangChain for custom NLP pipelines
- Extensive coverage of Audio Representations and Speech Recognition
- Extract features for speech recognition tasks
- Develop deep learning models for speech and audio
- Understanding of Computer Vision concepts like Transfer Learning and Object Detection
- Understand image segmentation and RNNs in captioning

Module 7: Capstone Project

The capstone project allows learners to implement the skills learnt throughout this programme. Learners will solve industry-specific challenges by leveraging various AI and ML techniques. The capstone project is the final step in the core learning path and will help you showcase your expertise.

- Showcase your Deep Learning skills starting from decision making process and covering other areas like data processing, model development, and results presentation.
- Demonstration of applied knowledge by applying theoretical concepts like neural networks, machine learning models, and advanced deep learning architectures to solve real-world problems.
- Hands-on problem-solving skills through implementing projects in domains like NLP, computer vision, or reinforcement learning, students showcase their ability to work on end-to-end AI solutions.
- Portfolio building by completing tangible, demonstrable work product to share in portfolios or during interviews with potential employers.
- Industry-relevant exposure by working on capstone projects aligned with real-world applications, like predictive analytics, image recognition systems, or autonomous agents, prepares students for industry demands.
- Collaboration and presentation skills and the ability to present technical findings effectively to non-technical stakeholders.
- Solution-oriented thinking by addressing a real-world challenge, students foster innovation and learn to design scalable, deployable AI and deep learning solutions.

Tools Covered

Who is This Programme Ideal For ?

Professionals keen to develop AI and ML expertise, with the objective of:

- Enhancing effectiveness in their current role
- Transitioning to AI roles in their organization
- Seeking to advance their career in the industry
- Giving shape to entrepreneurial aspirations
- Getting an opportunity to network with like-minded individuals and industry experts

Eligibility Criteria

For admission to this Artificial Intelligence and Deep Learning course, candidates should have:

- Education: Bachelors (four years or equivalent) or Masters in Science / Engineering / Management
- Work Experience: Minimum 1 Year
- Coding Experience: Programming Knowledge Required

Note: Graduates in other streams with relevant coding experience can apply

Application Process

Candidates can apply for this programme in 3 simple steps:

Step 1 Submit Application	Step 2 Application Review	Step 3 Admission
Tell us about yourself and why you want to take this programme	An admission panel will shortlist candidates based on their application	Selected candidates can join the programme by paying the admission fee

Talk to an Admission Counselor

We have a team of dedicated admissions counselors to help guide you in the application process and related matters. They are available to:

- Address questions related to the application
- Help you better understand the programme and answer your questions

Programme Fee

What is My Investment?

Application Fee **₹ 2,000**

Programme Fee

₹ 1,50,000

Programme Fee with Scholarship

₹ 1,25,000

(18% GST extra as applicable)

Special pricing for corporates

Fees paid is non-refundable and non-transferable

Modes of payment available

Internet Banking

Credit/Debit Card

UPI Payments

Easy Financing Options

9 month 0% Interest Scheme / Interest-Based Schemes

Unlock the Power of Artificial Intelligence and Deep Learning

Get Support

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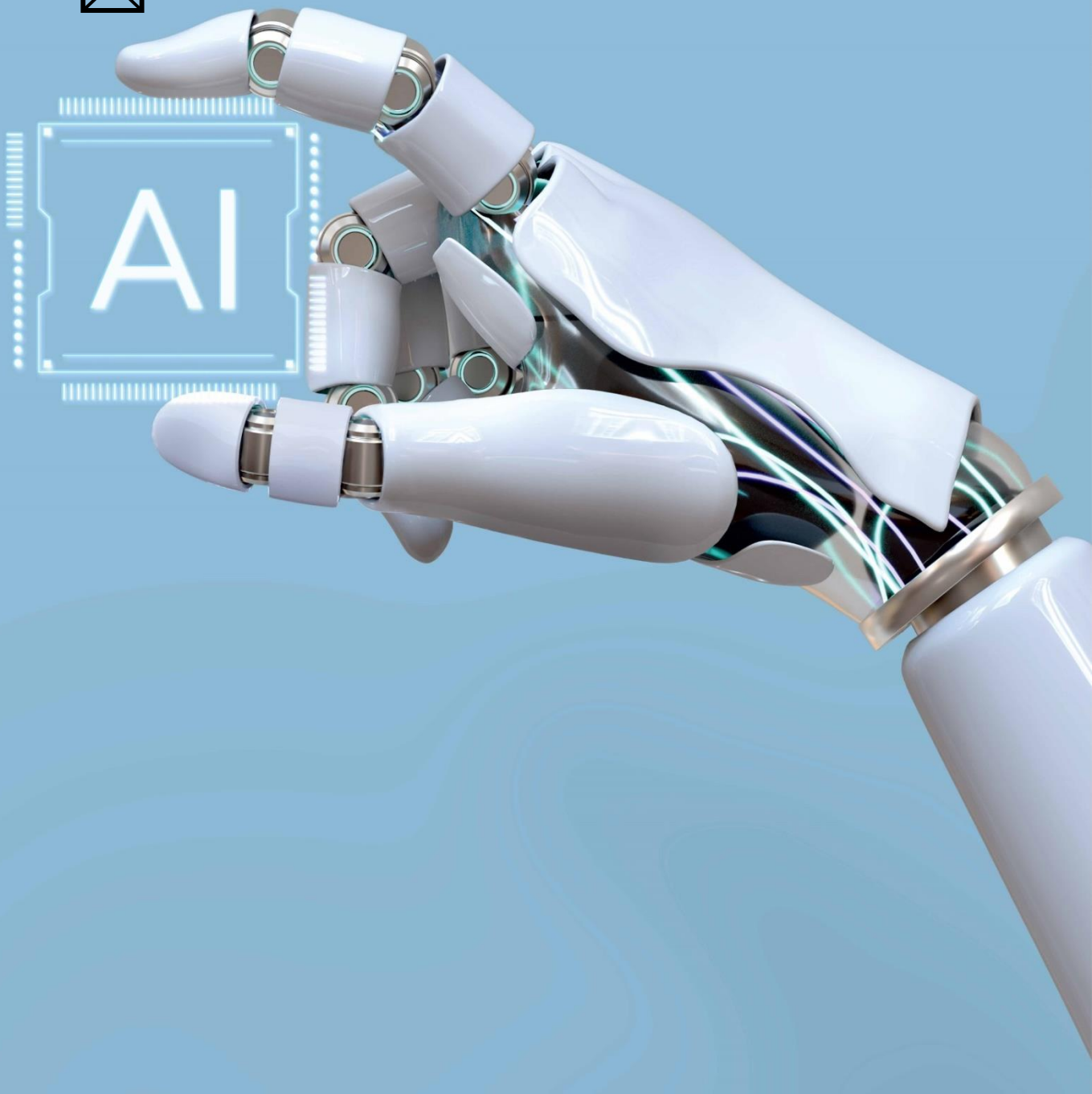


The Best People, the Best Solutions and
the Best Infrastructure – This is all what it
takes to help young talent in grooming
through their development phase
ACADEMIC BLOCK 2
SHRI BALWANT INSTITUTE OF TECHNOLOGY

WE EXCEL AT DEVELOPING

PRINCIPLED INNOVATIVE

TECHNOCRATS & THOUGHT LEADERS

IN GLOBAL COMMUNITIES

SBIT

ENGINEERING TOMORROW

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