



Grow with Gyan

Master's Certificate Program (MCP) in Data Science, AI, GenAI & AgenticAI – 3 Years UpSkill Program with Placement

To:

The Head of Department (HOD)

Artificial Intelligence & Machine Learning / Artificial Intelligence & Data Science Engineering

Sai Vidya Institute of Technology(SVIT), Bengaluru

Subject: Elevating Excellence: A 3-Year Advanced AI Mastery Program for AIML/AIDS Students

Dear HOD Sir,

This proposal outlines a strategic partnership to launch a highly specialized 3-Year Master's Certificate Program in AI, meticulously designed to build upon and significantly extend the advanced knowledge of your AIML/AIDS students. This program is engineered to transform your talented students into pioneering AI architects, researchers, and entrepreneurs, equipping them with cutting-edge skills to lead innovation, secure high-impact roles, and drive the future of the technology sector.

Our model is built on a shared commitment to student success, fostering a culture of deep learning, impactful research, and entrepreneurial innovation, all within a low-risk, outcome-driven financial structure.

1. Program Architecture: A Hybrid Model for Deep Learning & Innovation



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Our program is structured to integrate seamlessly with the academic calendar while providing over 2000 hours of intensive training, specifically emphasizing practical application and advanced theoretical understanding.

- **Mode:** A hybrid model combining the flexibility of online learning with the impact of in-person mentorship and hands-on lab sessions.
- **Total Duration:** ~2000+ Hours, comprising 1500+ online hours and 550+ offline hours.
- **Online Instruction:** 36 months of live, instructor-led sessions (2 sessions per week, 2 hours each), strategically scheduled to avoid exam periods and critical academic months.
- **Offline Immersion:** Intensive, full-day, face-to-face sessions on campus, facilitating deep dives into complex topics, advanced collaborative projects, and direct mentorship from industry and research experts.

Class Schedule:

Offline (Face to Face Session):

- 3rd Sem: 2 Weeks (10 Days) Full-Day Offline
- 4th Sem: 2 Weeks (10 Days) Full-Day Offline
- 5th Sem: 2 Weeks (10 Days) Full-Day Offline
- 6th Sem: 2 Weeks (10 Days) Full-Day Offline
- 7th Sem: 4 Weeks (10 Days) Full-Day Offline
- 8th Sem: 4 Weeks (10 Days) Full-Day Offline

Online - Instruction Led

- 36 Months Online (2 Sessions/week × 2 hrs) - Excluding Exams, and Other Internals and other Academic Hectic Months

2. 2. Curriculum: Beyond Fundamentals – Achieving AI Mastery



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The curriculum is meticulously designed to accelerate the expertise of AIML/AIDS students, creating T-shaped professionals with unparalleled breadth and depth in advanced AI domains.

- **Core Focus Areas (8 Key Skills for Advanced AI):**

- Python Full Stack (optimized for AI workloads)
- Data Science (Advanced Statistical Modeling & Big Data Integration)
- BI/Data Analytics (Strategic AI-driven Insights)
- Machine Learning (Advanced Algorithms & MLOps)
- Deep Learning & Computer Vision (SOTA Models & Real-Time Applications)
- NLP & AI Bot (Generative NLP & Conversational Agents)
- Generative AI (LLM, Prompt Engineering, Diffusion Models)
- Agentic AI, MultiAgentic AI, Multi-Context Protocol (MCP)

- **Complementary Specialization Modules:**

- Deep Research Methodologies: Advanced topics in Cloud AI, Big Data Analytics (Spark, PySpark) for large-scale research.
- AI Product & Entrepreneurship: Agile Project Management (JIRA, GitHub) focusing on AI product lifecycle, whole product development, and MVP strategies.
- Core Refresher: A 2-week online refresher for DSA & Core AI/ML Concepts to solidify foundational knowledge for complex applications.
- Professional Development: A 2-week online refresher for Advanced Aptitude and Soft Skills, including pitch development and leadership.

3. A Pedagogy of Innovation: From Learning to Leading

Our program moves beyond theoretical understanding to foster tangible innovation, ensuring students graduate as proven contributors to the AI field.

- Extensive Project Work: Over 150 projects, culminating in 3-5 real-world capstone projects, often leading to deployable solutions or research prototypes.
- Holistic Development & Recognition:



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- Monthly project demos with incentives for top-performing, innovative projects.
- Multiple hackathons focused on cutting-edge AI challenges.
- Guaranteed opportunities to publish multiple research papers in collaboration with college faculty and PragyanAI mentors.
- Industry internships and a mentored Final Year Project with a strong emphasis on practical deployment or novel research.
- Advanced Career & Entrepreneurship Preparation:
 - Rigorous mock interviews (4 Technical, 2 HR, and GD) tailored for AI specialist roles and startup pitches.
 - 1:1 career mentoring, entrepreneurship guidance, and professional profile building (Resume, LinkedIn, GitHub, research portfolio).
 - Deep Research Support: Dedicated mentorship and resources for students pursuing advanced academic or industrial research.
- Certification: Students earn 8 individual skill certificates plus one comprehensive Master's Certificate upon completion.

4. Customized for AIML/AIDS Leadership

This program is specifically crafted to empower students with an existing background in AI/ML/Data Science, pushing them to the forefront of the field.

- Advanced Generative AI Mastery: Dive deep into Transformer architectures, GANs, VAEs, and Stable Diffusion, focusing on hands-on model building, fine-tuning, and novel applications like image generation, captioning, and super-resolution.
- Agentic AI & Multi-Agentic Systems: This cutting-edge module provides hands-on experience in building autonomous AI agents using frameworks like LangChain, CrewAI, and AutoGPT, including multi-agent cooperation and human-in-the-loop systems.
- Hugging Face Ecosystem & MLOps for Advanced Models: Comprehensive training on deploying and managing state-of-the-art models using Hugging Face Transformers, Datasets, Diffusers, and Spaces, ensuring production readiness.



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- AI-Powered MVP Development with a Research/Innovation Lens: Leveraging students' existing AI knowledge to rapidly design, validate, and deploy Minimum Viable Products using AI-first, no-code/low-code tools, fostering an entrepreneurial mindset for bringing AI innovations to market.

5. A Partnership in Success: Placements & Financials

Our model is designed as a true partnership, where our success is directly tied to your students' outcomes, with a strong emphasis on achieving top-tier placements or fostering entrepreneurial ventures.

- Placement Goal: We aim for 100% placement for all eligible students, with a target salary range of 4–30 LPA, heavily focused on securing higher packages in specialized AI roles.
- Financial Structure:
 - Part 1 (Program Fee): A special fixed fee for SVIT of ₹10,000 per semester (total ₹60,000), a significant reduction from our standard rate of ₹25,000 per semester.
 - Part 2 (Pay After Placement - PAP): Paid only after the student secures a job or successfully launches an AI-driven startup.
 - Below 5 LPA CTC / Early-Stage Startup: ₹25,000
 - 5–10 LPA CTC / Seed-Funded Startup: ₹50,000
 - 10+ LPA CTC / Growth-Stage Startup: ₹100,000
 - Note: If a student secures placement through the college, their own efforts, or successfully validates an entrepreneurial venture, they pay only 50% of the PAP fee.

6. Operational Framework and Commitments

To ensure a smooth and transparent partnership, we propose the following framework:

- **Student Eligibility:** The program is open to students from the 2nd year onwards (AIML, AIDS, CSE & Allied Branches) with a 7.5+ CGPA. A minimum cohort of 50+ students is required to avail this special model.



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- **Payment Terms:** To streamline operations, we request that SVIT College collect the semester fees from students before the start of each semester, with the payment released to PragyanAI within 15 days after classes commence.
- **Placement & Entrepreneurship Guarantee Conditions:** To qualify, students must:
 - Maintain 85% attendance.
 - Complete all academic requirements, including advanced projects and exams.
 - Participate in a minimum of 2 hackathons, contribute to 2 research papers, and engage in 2 live projects/startup initiatives.
 - Maintain a minimum 7.5 CGPA with no backlogs.
- **Refund & Dropout Policy:**
 - **Look-Out Period:** A student can opt for a full refund of the program fee if they are not satisfied after the completion of the 3rd semester training.
 - **Early Dropout:** No refund of the program fee is provided after one month of the program's commencement.
 - **Non-Placement/Non-Venture Refund:** For students who meet all eligibility criteria and are not placed within 6 months of program completion, nor have successfully established a validated AI startup venture, 50% of the program fee (Part 1) will be refunded.
 - **Outcome Definition:** Any placement secured by a student after completing 2 or more semesters with PragyanAI (whether on-campus, off-campus, referral, or internship-to-hire) OR a demonstrable, validated entrepreneurial venture is considered a PragyanAI outcome for the purpose of the Pay After Placement fee.

PRAGYANAI

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PROGRAM IMPACT & ADVANTAGES FOR AIML/AIDS STUDENTS

From Academic Theory to Pioneering AI Architects & Entrepreneurs

ACCELERATED MASTERY



- Advanced Generative AI (LLMs, Diffusion)
 - Agentic & Multi-Agentic AI
- Cutting-Edge MLOps & Deployment
- 150+ Projects & 3-5 Capstone Ventures

INNOVATION & RESEARCH



- Deep Research Support & Mentorship
 - 2+ Guaranteed Papers
- Startup Incubation & Mentorship
- AI-Powered MVP Development
- Entrepreneurship Guidance

ELITE CAREER OUTCOMES



- 100% Placement Aim (4-30 LPA)
Focus on High-Value AI Roles
- AI Solution Architect
- AI Product Manager
- Data Scientist (Advanced)
- Data Scientist (Advanced)
- Profile Building (GitHub, LinkedIn)

RISK-MITIGATED FINANCIAL MODEL

Part 1: Pay After/Semester / Startup Success
50% off PAP if college placed



Below 5 LPA / Early Startup
Till 5 LPA / Seed Startup



5-10 LPA / 5-10 LPA / Seed / Startup:
₹50K Growth Startup ₹1000K

GUARANTEE

3rd Sem Look-Out Period (Full Refund)
50% Fee Refund If No Placement/Validated Venture



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Program Road Map:

3rd Semester

(Topics Covered during Online and Offline Sessions - Detailed Curriculum with Project /Case Studies will be shared before semester Start):

- **Python Full Stack & Data Processing/Data Wrangling**
 - Full Python - Includes Exceptional Handling, File Handling, DB Connectivity, Regular Expressions, OS/Utility Commands
 - Numpy
 - Pandas
 - Image Processing - Numpy, Pillow, OpenCV
 - Audio Processing - Using Numpy and Other Libs
 - Video Processing - Using Other Libs
 - Python Utility Projects
 - Data Wrangling Using Pandas and Numpy
 - Web Scraping
- **Overall 10+ Case Studies / Small Projects - Across above Topics**
- **IDE Tool: Google Colab, Kaggle NoteBook**
- **Key Libs/Tools Covered**
 - NumPy → Foundation for numerical computing, arrays, linear algebra, FFT, random numbers.
 - SciPy → Scientific computing, optimization, signal processing, integration, stats.
 - Pandas → DataFrames, Series, tabular data handling, grouping, merging, time-series.
 - Dask → Scalable parallel computation on large datasets (pandas-like).
 - Polars → High-performance DataFrame library (Rust-based, faster than pandas).
 - Vaex → Lazy, out-of-core DataFrame handling for huge datasets.
 - Pillow (PIL fork) → Basic image processing: resize, crop, filter, convert formats.



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- OpenCV (cv2) → Advanced computer vision: filtering, edge detection, object detection, face recognition.
- scikit-image → Image segmentation, transformations, filtering, feature extraction.
- imageio → Simple reading/writing of images, videos, GIFs.
- Librosa → Music & audio analysis (spectrograms, tempo, pitch, MFCCs).
- PyDub → High-level audio editing (cutting, merging, exporting to mp3/wav).
- Soundfile → Read/write audio files with more formats support.
- SpeechRecognition → Speech-to-text (uses Google API, Sphinx, etc.).
Text to Speech, Speech to Text
- MoviePy → Video editing (cut, concatenate, add audio/text, effects).
- PyAV → Pythonic bindings for FFmpeg (powerful for encoding/decoding video).
- imageio-ffmpeg → Lightweight FFmpeg wrapper for video reading/writing.
- scikit-video → Utilities for video processing.
- ffmpeg-python → wrapper around FFmpeg for encoding/decoding.
- **One or Two Libs Among Listed Below**
 - pytube → download YouTube videos/audio streams.
 - youtube-dl / yt-dlp (modern fork) → robust YouTube/video platform downloader.
 - PyTube3 → improved version of pytube.
 - youtube-transcript-api → fetch subtitles/transcripts of videos.
 - youtube-search-python → search YouTube videos programmatically.
 - pafy → get metadata, streams from YouTube.
 - ytmusicapi → access YouTube Music playlists, songs.
- **Requests** → HTTP library for fetching web pages.
- **BeautifulSoup (bs4)** → Parse HTML/XML easily.
- **One or Two from Libs from below**
 - lxml → Fast parsing of HTML/XML with XPath support.
 - Scrapy → Full-fledged web crawling & scraping framework.
 - Selenium → Automate browsers (JavaScript-heavy sites).



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- Playwright / Puppeteer (Puppeteer) → Headless browser automation.
- newspaper3k → Extract articles, titles, summaries from news sites.
- Click / argparse → Command-line tools.
- logging / rich / loguru → Logging and pretty console outputs.
- tqdm → Progress bars for loops.
- schedule / APScheduler → Task scheduling.
- PyInstaller → Convert Python scripts to executables.
- **Evaluation**
 - **Assignments**
 - Coding & Project Based
 - MCQ & Key Concept(Subjective) - Video (Clips - Explaining Concept - Self Recorded)
 - **Exam**
 - Project Challenge - Need to Submit - in 2-3 Weeks



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3RD SEMESTER SKILL ROADMAP

Python Full Stack & Data Processing/Data Wrangling Mastery

CORE PYTHON & DATA WRANGLING



- Full Python (Exceptional Handling, DB Connectivity Fundamentals, File IO)
- Data Wrangling & Cleaning

WEB SCRAPING



- Pillow, OCVVV, Scikit-image
- Data Wrangling & Cleaning

WEB TECHNOLOGIES



- Requests, BeautifulSoup, lxml, Scrapy
- Logging: rich, loguru
- Progress: tqdm
- Scheduling: Scheduler

PROJECT-BASED LEARNING



- 10+ Case Studies / Small Projects
- Python Utility Projects

MULTIMEDIA PROCESSING

IMAGE

- Librosa, PyDub, IxAV, Soundfile, lxml



VIDEO



WEB TECHNOLOGIES



- Selenium, Playwright, pytube, yt-dlp



DEVELOPMENT TOOLS & UTILITIES



- IDE: Google Colab, Kaggle Notebook
- CLI: Click, argon2
- Scheduling: schedule
- Deployment: PyInstaller

EVALUATION



- Video Clips (Self-Recorded Concept Explanations)
- Exam
- Project Challenge (2-3 Weeks)

Detailed Curriculum with Project/Case Studies will be shared before semester start.



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4th Semester

(Topics Covered during Online and Offline Sessions - Detailed Curriculum with Project /Case Studies will be shared before semester Start)

- **Data Science Foundation & Advance Data Wrangling**
 - Statics & Math Foundation
 - Sampling, Distributions, Descriptive & Inferential Statics, ANOVA, Hypothesis Handling and etc
 - Probability and Other Key Concepts
 - Data Visualization
 - Data Science - Life Cycle & Introduction
 - Explorative Data Analysis - EDA
 - Data Analysis
 - Univariate, Bivariate and MultiVariate
- **Domain Knowledge & Case Studies Across (15 Case Studies/Projects)**
 - Healthcare
 - BSFI
 - Agriculture
 - Supply Chain and Logistic
 - Retail and Ecommerce
 - Sports, Media & Entertainment
 - Sales, Marketing, Operation and HR, Social Media
 - Other
 - **Education** → Student performance prediction, adaptive learning systems
 - **Energy** → Smart grid optimization, renewable energy forecasting
 - **Government / Smart Cities** → Traffic prediction, citizen feedback analysis
 - Etc
- **Overall 15+ Case Studies / Small Projects - Across above Topics**
- **IDE Tool: Google Colab, Kaggle NoteBook**



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- **Key Libs/Tools Covered**

- SymPy → Symbolic mathematics, equation solving, symbolic differentiation/integration.
- Math / Statistics (builtin) → Basic math functions, probability, statistics utilities.
- Statsmodels → Regression, time series analysis, hypothesis testing
- Pingouin → Advanced statistical tests, effect sizes
- Matplotlib → Histograms, probability plots
- Seaborn → Distribution plots, correlation heatmaps
- Plotly → Interactive probability & math visualizations
- OpenRefine → Cleaning messy CSV/Excel data

- **One or Two Among**

- GeoPandas → Geospatial extension of Pandas, makes working with shapefiles easy.
- Shapely → For geometric objects and spatial operations.
- Folium → Builds interactive Leaflet.js maps directly from Python.
- Rasterio → For raster (satellite) imagery handling.
- HoloViews + GeoViews → Declarative geospatial visualization.
- Leafmap → Simplified geospatial visualization with interactive Jupyter maps.
- Panel + Holoviz → Interactive dashboards with multiple visualizations.

- **Exploratory Data Analysis (EDA)**

- Pandas-Profilng, SweetViz, D-Tale → Automated EDA

- **Either Covered Here or During Deep Learning Module / Machine Learning Module**

- SimpleITK (medical imaging)
- yfinance, TA-Lib
- EarthPy, Rasterio (satellite data)

- **Project Demo: BiMonthly - Online or Offline (College - Need to Conduct) - On Topics Covered. Exact Dates will be announced later**



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- Either Team or Individual - All Projects should be different in either Problem Statement or tool/libraries or datasets or domain
- Problem statements - Should be selected from our list or students can propose themselves
- Presentation Template, Project Report Template will Be share
- Project Evaluation - Peer Evaluation and Faculty Evaluation will Be shared
- Evaluation
 - Assignments
 - Coding & Project Based
 - MCQ & Key Concept(Subjective) - Video (Clips - Explaining Concept - Self Recorded)
 - Exam
 - Project Challenge - Need to Submit - in 2-3 Weeks

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4TH SEMESTER SKILL ROADMAP

Data Science Foundations & Advance Data Wrangling

STATISTICS & MATH FOUNDATION



- Sampling, Distributions, Hypothesis Handling, Probability



DATA VISUALIZATIONS



- Sample, Collum, Hypothesis Nondling, ANOVA



DOMAIN KNOWLEDGE & CASE STUDIES



- 15+ Case Studies across Healthcare, BFSI
- Agriculture and Supplin,
- Retation, Energy/e-commerce
- Government/Smart Cities)



PROJECT-BASED LEARNING



- Assingments (Coding/Project)
- Video Clips
- Project Challenge

DATA VISUALIZATION & EDA

- 15 ta Science Life Cycle, Univrate/Bivariate/Multivariate Analysis
- Matapldoit, Seabran, Seabron, Plotly, Automated EDA Pandas-Proffiling) SweetViz)



GEOSEATAL & TIME-SERIES



- Google Colab
- Sateertig, Rasterio,
- Facebook Prophet



IDE & KEY LIBRARIES



- Google Colab,
- Sympy, Piotebok
- OpenRefine



EVALUATION



- Assingments (Codids
 video Clips
- Exam
- Project Challenge (2-3 Weeks)

Project Demo: BiMonthly (Online/Offline) - All Projects should be different.





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5th Semester

(Topics Covered during Online and Offline Sessions - Detailed Curriculum with Project /Case Studies will be shared before semester Start):

1. BI / Data Analytics

- a. Business Intelligence Foundation
- b. Excel & Advance Excel Based Analytics
- c. BI Tools

i. Two Tools In Detail and Two In Brief Among Listed Below

- 1. Tabaleu
- 2. PowerBI
- 3. Google Looker
- 4. Metabase – Open-source BI & dashboarding tool
- 5. Apache Superset – Data exploration, visualization, and dashboard creation
- 6. Redash – Querying databases and building dashboards
- 7. KNIME – Open-source analytics platform with drag-and-drop workflows
- 8. Pentaho Community Edition (Kettle) – ETL + analytics suite
- 9. Grafana – Great for monitoring & real-time dashboards (works with SQL, NoSQL, time-series DBs)
- 10. Advance Excel Based
 - a. Pivot Tables & Pivot Charts – Summarization & visualization
 - b. Power Query – ETL inside Excel (data cleaning & transformation)
 - c. Analysis ToolPak – Statistics & regression add-in
 - d. XLSTAT – Statistical analysis add-on
 - e. Data Analysis ToolPak – Hypothesis testing, ANOVA, regression, forecasting
 - f. xlwings – Run Python in Excel for advanced analytics

- d. Brief overview About Big Data - Data WearHouse, Data Lake, BIG Data Ecosystem, Spark, PySpark etc

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e. Domain Knowledge & Case Studies Across (5-8 Case Studies/Projects)

- i. Healthcare
- ii. BSFI
- iii. Agriculture
- iv. Supply Chain and Logistic
- v. Retail and Ecommerce
- vi. Sports, Media & Entertainment
- vii. Sales, Marketing, Operation and HR, Social Media
- viii. Other
 - 1. Education → Student performance prediction, adaptive learning systems
 - 2. Energy → Smart grid optimization, renewable energy forecasting
 - 3. Government / Smart Cities → Traffic prediction, citizen feedback analysis
 - 4. Etc

2. Machine Learning

- a. Foundation - SuperVised, Unsupervised, And Other Types
- b. ML LifeCycle
- c. Classification - Algorithms(15+ Algo)
 - i. LR, KNN, RF, SVM, XGBoost, LightGBM, CatBoost etc
- d. Classification Model Evaluation Matrics
 - i. Confusion Matrix, Classification Report, ROC-AUC etc
- e. Regression / Predictive Model - Algorithms(10+)
 - i. LR, KNN, Etc
- f. Regression Model Evaluation
 - i. MSE, RMSE, R2 Etc
- g. Clustering - Algo(10+ Algorithms)
 - i. KMeans, Hierarchy etc
- h. Clustering Model Evaluation
 - i. Intrinsic and Extrinsic
- i. Model Optimization - Hyper Parameter Tuning



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- j. Feature Engineering - Including Dimension Reduction
- k. **Vibe Coding - Building ML Model using GenAI**
- l. Model Deployment
 - i. GitHub, Streamlit, Gradio
 - ii. Deploying Models over - Streamlit.io
- m. **Domain Knowledge & Case Studies Across (15+ Case Studies/Projects)**
 - i. Healthcare
 - ii. BSFI
 - iii. Agriculture
 - iv. Supply Chain and Logistic
 - v. Retail and Ecommerce
 - vi. Sports, Media & Entertainment
 - vii. Sales, Marketing, Operation and HR, Social Media
 - viii. Other
 - 1. Education → Student performance prediction, adaptive learning systems
 - 2. Energy → Smart grid optimization, renewable energy forecasting
 - 3. Government / Smart Cities → Traffic prediction, citizen feedback analysis
 - 4. Etc
- 3. **Tools & Libs**
 - a. Sklearn, XGBoost, LightGBM, CatBoost, scipy, hdbSCAN
 - b. Yellowbrick – Visual diagnostic tools for ML (classification, regression, clustering visualization).
 - c. MLxtend – Visualizations for decision regions, classifier comparisons, pipelines.
 - d. Scikit-plot – Quick visualization wrappers around scikit-learn models (confusion matrix, ROC curves, calibration plots).
 - e. t-SNE (sklearn.manifold) – Visualize high-dimensional data in 2D/3D.
 - f. UMAP – Dimensionality reduction, better global structure preservation than t-SNE.



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- g. PCA (scikit-learn, matplotlib) – 2D/3D scatter plots of transformed features.
 - h. AutoViz – Automated EDA & visualization for feature importance, distributions, correlations.
 - i. Optuna / Hyperopt / Ray Tune / Scikit-Optimize – Hyperparameter tuning with visualization dashboards.
4. **Project Demo: BiMonthly - Online or Offline (College - Need to Conduct) -**
On Topics Covered. Exact Dates will be announced later
- a. Either Team or Individual - All Projects should be different in either Problem Statement or tool/libraries or datasets or domain
 - b. Problem statements - Should be selected from our list or students can propose themselves
 - c. Presentation Template, Project Report Template will Be share
 - d. Project Evaluation - Peer Evaluation and Faculty Evaluation will Be shared
5. **Hackathon - 1**
- a. Online Hackathon/Participate Hackathon Suggested - Problem Statements will be given and Final Demo - Online
6. Evaluation
- a. Assignments
 - i. Coding & Project Based
 - ii. MCQ & Key Concept(Subjective) - Video (Clips - Explaining Concept - Self Recorded)
 - b. Exam
 - i. Project Challenge - Need to Submit - in 2-3 Weeks

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5TH SEMESTER SKILL ROADMAP

SVIT

BI / DATA ANALYTICS

Business Intelligence Foundation
Excel & Advanced Excel

BI Tools
S. Tbebau

Tableau, PowerBI, Looker, Metbase

Advanced Excel Based

- Pivot Tables & Charts
- Power Query
- Analysis ToolPak
- xlwings
- Brief Overview of Big Data (Warhouse, Lake, Spark)

DOMAIN KNOWLEDGE & CASE STUDIES

Healthcare, BFSI, Agriculture, Supply Chain, Retail & Ecommerce, Education

MACHINE LEARNING

Foundation
Supervised, Unsupervised, ML Lifecycle, Algorithms (15+): LR, KNN, RF SVM, XGBoost, CatBoost, Evaluation Metrics: Confusion Matrix, ROC-AUC

Classification
Algorithms (10+): LR, KNN, Etc. Evaluations: MSE, RMSE, R2

Clustering
Algorithms (10+): Kmeans, Evaluations: Intrinsic & Extrach

Model Optimization & Deployment
Hyperparameter Tuning, Feature Engineering & Dimension Reduction, Model Deployment: Github, Streamlit, Gradio

DOMAIN KNOWLEDGE & CASE STUDIES

Healthcare, BFSI, Agriculture, Supply Chain, Retail & Ecommerce, Education



PROJECT-BASED LEARNING
Assignments, Coding/Project Based
MCQ & Key Concept Videos
Hackathon - 1



EVALUATION
Exam, Project Challenge (2-3 Weeks)



Hackathon - 1



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6th Semester

(Topics Covered during Online and Offline Sessions - Detailed Curriculum with Project /Case Studies will be shared before semester Start):

1. Advance Machine Learning

- a. Recommendation System
 - i. TensorFlow Recommenders, Surprise Etc
- b. Time Series
 - i. Statsmodels, pmdarima, arch, Facebook Prophet, Etc
- c. Associative Rule / Data Mining
 - i. MLxtend, PyFIM Etc
- d. Anomaly Detection
- e. Explainable AI
- f. AutoML - No Code / Low Code Tool
 - i. PyCaret, AutoGulcon etc
 - ii. LIME (Local Interpretable Model-agnostic Explanations)
 - iii. SHAP (SHapley Additive exPlanations)
 - iv. InterpretML (Microsoft)
 - v. Dtreeviz
 - vi. PDPbox
- g. Vibe Coding - Building ML Model using GenAI
- h. Domain Knowledge & Case Studies Across (10+ Case Studies/Projects)
 - i. Healthcare
 - ii. BSFI
 - iii. Agriculture
 - iv. Supply Chain and Logistic
 - v. Retail and Ecommerce
 - vi. Sports, Media & Entertainment
 - vii. Sales, Marketing, Operation and HR, Social Media
 - viii. Other
 - 1. Education → Student performance prediction, adaptive learning systems



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2. Energy → Smart grid optimization, renewable energy forecasting
 3. Government / Smart Cities → Traffic prediction, citizen feedback analysis
 4. Etc
- i. **10+ Case Studies / Small Projects - across Advance Machine Learning**
2. **Deep Learning & Computer Vision**
 - a. Deep Learning Foundation
 - b. Tensorflow, Keras And PyTorch Foundation
 - c. ANN /MLP
 - d. CNN
 - i. Classification and Segmentation
 - ii. Well Known Model Across Classification and Segmentation
 1. VGG, RegNet, UNet etc
 - e. RNN - LSTM, GRU
 - f. AutoEncoder
 - g. Transfer Learning & Hybrid Models
 - h. Advance Image Processing and Data Augmentation Techniques
 - i. Model Building and Optimization Technique
 - j. Explainable AI
 - i. GradCAM, Saliency Maps, What-If Tool (Google AI), Captum (PyTorch), TF-Explain, Alibi (Seldon), What-If Tool (Google AI), TensorBoard etc
 - k. Computer Vision
 - i. Object Detection & Tracking
 - ii. Faces Detection & Recognition
 - iii. OCR
 - iv. Pose Estimation, Gesture Recognition etc Using MediaPipe and Other Lib
 - v. BioMetric -Thumb, Retina etc
 - vi. Depth Estimation, Object Counting
 - vii. Similarity DL Model

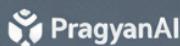


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- I. Model Development - Domain Case Studies - Above Mentioned Plus
 - i. Healthcare - Including Medical Imaging
 - ii. Satellite Image & Autonomous Driving(Automobile)
 - iii. Sport - Analytics
 - iv. Audio - Music, Voice etc Base
 - v. Image Fusion Based
- m. **15+ Case Studies / Small Projects - Across DL & CV**
- 3. **Project Demo: BiMonthly - Online or Offline (College - Need to Conduct) -**
On Topics Covered. Exact Dates will be announced later
 - a. Either Team or Individual - All Projects should be different in either Problem Statement or tool/libraries or datasets or domain
 - b. Problem statements - Should be selected from our list or students can propose themselves
 - c. Presentation Template, Project Report Template will Be share
 - d. Project Evaluation - Peer Evaluation and Faculty Evaluation will Be shared
- 4. **Hackathon - 2**
 - a. Online Hackathon/Participate Hackathon Suggested - Problem Statements will be given and Final Demo - Online
- 5. **Research Paper - 1 / Internship (At any Company if Students Selected by company from college)**
 - a. Team of 2-4 Students with One College Faculty - Topics provided by us
 - i. Students have to work in collaboration with Faculty
 - ii. PragyanAI will be One Author and PragyanAI will not pay paper publication Fee
- 6. **Evaluation**
 - a. Assignments
 - i. Coding & Project Based
 - ii. MCQ & Key Concept(Subjective) - Video (Clips - Explaining Concept - Self Recorded)
 - b. Exam
 - i. Project Challenge - Need to Submit - in 2-3 Weeks



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6TH SEMESTER SKILL ROADMAP

Advanced ML & Deep Learning / Computer Vision Mastery

SVIT

ADVANCED MACHINE LEARNING



Recommendation Systems

TensorFlow Recommenders, Surprise



Time Series

Statsmodels, Prophet, LOF
pmdarima, arch



Anomaly Detection

Isolation Forest, Prophet, One-Class SVM
One-Class SVM



AutoML & GenAI-based ML

PyCaret, AutoGluon, GenAI-based ML
Vibe Coding



AutoML & GenAI-based ML

Retail & E-commerce, Sports,
Education (10+ Projects)



DOMAIN KNOWLEDGE & CASE STUDIES

Healthcare, BFSI,
Agriculture, Supply Chain,
Retail & E-commerce, Education

DEEP LEARNING & COMPUTER VISION



DL Foundations & Architectures

TensorFlow, PyTorch, ANN,
Belufer Learning



Vision Tasks

VGG, UNET, Resnet, ANN,
RNN-LSTM/ IGRU, AutoEncoder
Transfer Learning



Advanced Image Processing (Detection)

Data Augmentation, Object Image Fusion,
Object Detection/ Pose Estimation
Precursors



Explainable DL

GradCAM, Saliency Maps,
Medical Cross Maps, Satellite Imagery
Pose Estimation



Computer Vision & Applications



Healthcare, BFSI,
Assignments, Coding/Project Driving
Sport Analytics (15+ Projects)



PROJECT-BASED LEARNING

AI Monthly Demos, Team/Individual Projects
Research Paper - 1 / Internship
Hackathon - 1



EVALUATION

Online Hackathon, Project/Individual Projects,
Project Challenge (2-3 Weeks)





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7th Semester

(Topics Covered during Online and Offline Sessions - Detailed Curriculum with Project /Case Studies will be shared before semester Start):

1. Advance Deep Learning & Computer Vision

- a. Transformer - In Detail
 - i. Hands on Model Building
- b. GenAI - GAN, VAE, Stable Diffusion
 - i. Hands on Model Building
 - ii. Image Generation - GAN, VAE Based,
 - iii. Style GAN
 - iv. Image Captioning - CLIP
 - v. Condition GAN
 - vi. Super Resolution - SRGAN
 - vii. Image-to-image translation (CycleGAN, Pix2Pix).
 - viii. GAN/VAE as Data Augmentation
 - ix. Diffusion Based Image Generation
- c. Transformer Based - Image Classification, Segmentation etc
- d. Advance SOTA Model
 - i. SAM, DIVNO, VIT, Etc
- e. Data Annotation Tools (2 among Below List)
 - i. LabelImg – Image annotation (bounding boxes), widely used in object detection datasets.
 - ii. CVAT (Computer Vision Annotation Tool) – Powerful, open-source annotation tool developed by Intel; supports image, video, polygons, masks.
 - iii. Labelme – Simple image annotation tool (polygon, rectangle, circle, line, point).
 - iv. VoTT (Visual Object Tagging Tool) – Microsoft's annotation tool, supports object detection & classification.
 - v. Scalable – For 2D/3D image & video annotation, useful for autonomous driving datasets.



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- vi. makesense.ai – Free online tool for bounding boxes, keypoints, and segmentation.
- vii. SuperAnnotate – End-to-end data annotation with automation.
- viii. Label Studio
- f. Advance Computer Vision, Deep Learning
 - i. **FiftyOne**
 - 1. Powerful for dataset exploration, visualization, evaluation of models (detection, segmentation, classification).
 - 2. Works with PyTorch, TensorFlow, Detectron2, YOLO, etc.
 - ii. Roboflow
 - 1. Provides dataset annotation, preprocessing, augmentation, and training pipelines (YOLO, TF, PyTorch).
 - iii. **MediaPipe (Google)**
 - 1. Fast CV pipelines for face, hand, body, gesture, etc.
- g. Edge & Real-Time Vision
 - i. TinyML for object detection on IoT devices.
 - ii. **TFLite (TensorFlow Lite)**: Optimized deep learning for mobile and edge (NNAPI, CoreML).
 - iii. **PyTorch Mobile & ExecuTorch** → PyTorch models optimized for mobile/edge inference.
 - iv. **EdgelImpulse** → No-code/low-code ML deployment to microcontrollers & edge devices.
 - v. **Pruning & Quantization Toolkits** (PyTorch FX, TFLite Quantization, HuggingFace Optimum).
 - vi. One or Two Case Studies on Below Dataset
 - 1. **Tiny-ImageNet** → Edge-scale ImageNet variant.
 - 2. **EdgeCases** (custom small object datasets, e.g., drones, mobile).
 - 3. **KITTI Dataset** → Real-time autonomous driving benchmarks.
 - 4. **Waymo Open Dataset** → Self-driving, optimized for latency tests.
 - 5. **VisDrone** → Drone-based real-time detection/tracking.



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- 6. **MOTChallenge** → Multi-object tracking benchmark.
- 7. **WIDER FACE** → Robust face detection under real-world constraints.
- h. Hugging Face - In Detail
 - i. **Transformers** – Pretrained models (NLP, CV, Speech, Multimodal).
 - ii. **Datasets** – Community datasets with streaming, efficient loaders.
 - iii. **Tokenizers** – Fast tokenization for large-scale models.
 - iv. **Evaluate** – Standardized metrics library.
 - v. **Diffusers** – Stable Diffusion & generative model pipelines.
 - vi. Hugging Face Spaces (Deployment Playground)
 - vii. Model Building and Model Hosting on HuggingFace
- i. 20+ Case Studies / Projects across Above Topics
- 2. NLP & AI Bot
 - a. NLP Foundation & Text Processing
 - b. **Text Understanding & Representation**
 - i. Text Classification → Spam detection, sentiment analysis, topic categorization
 - ii. Intent Detection → Identify user intent in chatbot queries
 - iii. Named Entity Recognition (NER) → Extract people, places, dates, organizations
 - iv. Part-of-Speech (POS) Tagging → Grammar structure understanding
 - v. Semantic Similarity → Matching FAQs, duplicate question detection
 - vi. Embedding: Text Embedding & Representation → Word2Vec, BERT embeddings
 - c. Conversational AI & Bots
 - d. Information Retrieval & Summarization
 - e. Sentiment, Opinion & Social Media NLP
 - f. Dialogue & Context Handling
 - g. **Speech & Multimodal NLP**
 - i. Speech-to-Text → Transcription (e.g., meetings, lectures)
 - ii. Text-to-Speech → Voice assistants, audiobook generation



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- iii. Multimodal Bots → Text + Image + Voice inputs (e.g., "Upload bill & ask insurance query")
 - iv. Video Captioning & Description Bots
- h. Audio - Text , Video to Text Summarization, Language Translation, Etc
 - i. 20+ Case Studies / Projects across Above Topics
 - i. ML, RNN, Transformer and HuggingFace Based
- 3. **Project Demo: Monthly - Online or Offline (College - Need to Conduct)** - On Topics Covered. Exact Dates will be announced later
 - a. Either Team or Individual - All Projects should be different in either Problem Statement or tool/libraries or datasets or domain
 - b. Problem statements - Should be selected from our list or students can propose themselves
 - c. Presentation Template, Project Report Template will Be share
 - d. Project Evaluation - Peer Evaluation and Faculty Evaluation will Be shared
- 4. Hackathon - 3
 - a. Online Hackathon/Participate Hackathon Suggested - Problem Statements will be given and Final Demo - Online
- 5. Final Year Project
 - a. Students will Select Topic & Students only develop
 - b. PragyanAI mentor as External Guide
- 6. **Research Paper - 2 / Internship (At any Company if Students Selected by company from college)**
 - a. Team of 2-4 Students with One College Faculty - Topics provided by us
 - i. Students have to work in collaboration with Faculty
 - ii. PragyanAI will be One Author and PragyanAI will not pay paper publication Fee
- 7. **Evaluation**
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 - i. Coding & Project Based
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 - b. Exam
 - i. Project Challenge - Need to Submit - in 2-3 Weeks

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7TH SEMESTER SKILL ROADMAP

Advanced Deep Learning, Computer Vision & NLP/AI Bots Mastery



ADVANCED DEEP LEARNING & COMPUTER VISION



Transformer & GenAI

Transformer Architecture, Hands-on Model Building
GAN, VAE, Stable Diffusion (Image, StyleGAN, SRGAN, CycleGAN)



Advanced CV & Models

SOTA Models: SAM, DINO, ViT
Data Annotation Labeling, CVAT, FiftyOne, Roboflow
MediaPipe (Face, Hand, Pose Estimation)



Edge & Real-Time Vision

TinyML, TFLite, PyTorch Mobile, EdgeImpulse
EdgeImpenthent



Hugging Face Ecosystem

Transformers, Datasets, Tokenizers, Evaluate,
Pruning Spaces (Deployment)



Case Studies

20+ Projects: Medical Imaging, Satellite,
Autonomous Driving, Sport Analytics,
Audio/Image Fusion

NLP & AI BOT DEVELOPMENT



NLP Foundation & Text Processing

Text Understanding & Representation,
Embeddings (WordVec, BERT)



Conversational AI & Bots

Information Retrieval, Summarization, Sentiment Analysis
Text Classification, NER, POS Tagging,
Semantic Similarity



Advanced Applications

Dialogue & Context Handling, Speech-to-Text,
Text-to-Speech



Video Captions

Video Caption, Audio/Video Text Summarization
Summarization + Voice!



Case Studies

20+ Projects: ML, RNN, Transformer &
HuggingFace-based applications

PROJECT-BASED LEARNING



Monthly Project Demos (Online/Offline),
Team/Individual, Final Year Project (External Guide)



Assignment / Project Based, MOOC & Key
Concepts (External Guide)

EVALUATION



Research Paper - 2 / Internship



Hackathon - 3



Assignments, Coding/Project Based,
MOOC & Challenge (2-3 Weeks)



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8th Semester

(Topics Covered during Online and Offline Sessions - Detailed Curriculum with Project /Case Studies will be shared before semester Start):

1. Generative AI – Foundation & Applications

- a. GenAI, LLM, MLLM, SLM, VLM etc
- b. Applications across domains
- c. Ethical concerns
- d. Playground and Platforms

2. Large Language Models (LLMs)

- a. Transformer Architecture (Attention, Self-Attention, Multi-Head Attention)
- b. Pretrained LLMs: GPT, LLaMA, Falcon, Mistral, Claude, Gemini
- c. Fine-Tuning: Full fine-tuning, LoRA, PEFT, Parameter-efficient tuning
- d. RAG (Retrieval Augmented Generation) – grounding responses in external data
- e. LLMOps – monitoring, evaluation, cost optimization

3. Prompt Engineering

- a. Basics: Zero-shot, Few-shot, Chain-of-Thought prompting
- b. Advanced: Self-consistency, Tree-of-thoughts, ReAct prompting
- c. Role prompting: System vs. User vs. Assistant instructions
- d. Guardrails: Safety prompts, bias reduction, hallucination control
- e. Prompt compression & token optimization
- f. Tools: LangChain PromptTemplates, Guidance, DSPy, LLAMA Index, Groq, COHERE, FIREWORKs
- g. Domain Specific Prompting : Marketing, Coding (ML Model, End To End), Debugging, VIBE Coding In Depth

4. Agentic AI (AI Agents)

- a. Components: Perception (sensing), Reasoning, Memory, Action
- b. Tools: LangChain, LlamaIndex, CrewAI, AutoGPT, BabyAGI
- c. Agent memory: short-term vs. long-term memory
- d. Action execution: API calls, web browsing, tool usage
- e. Guardrails & safety in autonomous agents

5. Multi-Agentic AI



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- a. Multi-agent systems: Cooperation, competition, negotiation
- b. Orchestrators: Centralized vs. Decentralized coordination
- c. Human-in-the-loop in multi-agent frameworks
- d. Multi-agent reinforcement learning (MARL)
- e. Applications: Simulation, strategy, business workflows, gaming, governance
- f. Frameworks: CrewAI, AutoGen, Swarm, Hugging Face AutoTrain + Agents

6. MCP – Model Context Protocol

- a. Anthropic MCP SDK
- b. LlamaIndex / LangChain MCP bridges
- c. Integration with Hugging Face Spaces
- d. Wrap SQLite, Google Sheets API, and Hugging Face datasets.
- e. SQLite/Postgres with MCP

7. Applications & Case Studies

- a. Multi-source RAG Pipelines (Docs + DB + API)
- b. Research Agent: Summarizes latest scientific papers + cross-references sources
- c. Business Agent: Automates meeting scheduling, note-taking, follow-ups
- d. Data Analyst Agent: Reads CSV, runs ML model, generates dashboards automatically
- e. Ops Agent: Monitors logs, detects anomalies, alerts humans
- f. Learning Agent: Adapts to student progress & modifies curriculum
- g. Multi-Agent Tutoring System – Teacher agent, quiz agent, evaluator agent
- h. Customer Service Hub – Billing agent, technical support agent, escalation agent
- i. Healthcare Assistant – Diagnosis agent, treatment planning agent, medical compliance agent
- j. Supply Chain Simulation – Buyer agent, supplier agent, logistics agent
- k. Smart Cities – Traffic agent, energy management agent, pollution monitoring agent

8. Module: AI-Powered MVP Development & Deployment



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- a. **Foundations of MVP & Prototyping**
 - i. What is an MVP? (Minimum Viable Product vs. Prototype vs. POC)
 - ii. Design Thinking & Lean Startup Methodology
 - iii. Rapid Idea Validation: Problem → Solution Fit → Market Fit
 - iv. Agile & Iterative Development Mindset
- b. **Project Management & Collaboration Skills**
 - i. Agile Project Management (Scrum, Kanban for MVPs)
 - ii. Tools: Trello, Jira, Notion, GitHub Projects
 - iii. Timeboxing & Sprint Planning for Fast Prototyping
 - iv. Cross-functional teamwork: Design, Dev, AI/ML, Business
- c. **Design Thinking for MVPs**
 - i. User Research & Persona Building
 - ii. Customer Journey Mapping
 - iii. Wireframing & Low-Fidelity Prototyping (Figma, Miro)
 - iv. UX/UI for AI-powered Applications
- d. **AI Integration in MVPs**
 - i. Identifying where AI adds value in MVPs
 - ii. Using Pre-trained Models (Hugging Face, OpenAI, Google Vertex AI)
 - iii. Building AI-driven features:
 - 1. NLP Bots
 - 2. Computer Vision modules
 - 3. Recommendation Engines
 - 4. Predictive Analytics
- e. **Web & Mobile App Development with AI Tools**
 - i. Instead of traditional full-stack → leverage AI & no-code/low-code tools.
 - ii. **Tools Showcase (one or two Tools in The list Depends on Case studies/project Selected):**
 - 1. Rocket – AI-first app builder
 - 2. Replit – collaborative AI-assisted coding
 - 3. WebFlow – no-code websites
 - 4. Relume – Figma-to-React/Webflow



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5. Firebase Studio – AI-powered Firebase setup
6. Glide – no-code mobile/web apps
7. Thunkable – drag-and-drop mobile app builder
8. FlutterFlow – Flutter-powered no-code mobile app builder
9. Adalo – app prototyping
10. Cursor – AI coding IDE

f. Prototyping Fast

i. Setting the Stage

1. Shift in developer skillset → From Full Stack → AI Solution Designer
2. Tools showcase (Rocket, Replit, FlutterFlow, Glide, Hugging Face, Firebase)
3. Mini Exercise → Each team picks frontend + backend AI toolstack

ii. Build the MVP

1. Frontend MVP: FlutterFlow / Thunkable / Glide / Rocket
2. Import Figma / prompt-based UI generation
3. Backend MVP: Flask/FastAPI + AI model + Firebase hosting
4. Mini Project → AI-powered MVP (basic UI + connected AI API)

g. Deployment & Scaling MVPs

i. Deployment on Hugging Face Spaces, Streamlit Cloud, Vercel, Netlify

ii. Integration

1. Connect frontend with backend (REST API, Firebase, Webhooks)
2. LangChain / LlamaIndex for RAG
3. Mini Exercise → Teams integrate frontend app with AI backend

iii. Deployment & Publishing

1. WebApp: Hugging Face Spaces, Streamlit Cloud, WebFlow, Firebase
2. Mobile App: FlutterFlow/Thunkable APK build → local test



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3. GitHub/Firebase for collaboration
4. Mini Exercise → Deploy & share app link/APK
- iv. Handling feedback loops → Updating MVP iteratively
- h. **Case Studies & Hands-on Projects**
 - i. AI Chatbot MVP for EdTech (Streamlit + Hugging Face + Firebase)
 - ii. Computer Vision MVP for Healthcare (Colab + FastAPI + Streamlit)
 - iii. Personal Finance Mobile App with AI-powered Insights (React Native + OpenAI API)
 - iv. Multi-Agent AI Tutor MVP (LangChain/Agents + Gradio)
9. Real World Project - Quick MVP Development / Internship at Companies (if Students Get Selected at Company)
 - a. 2-3 Live Projects
10. **Project Demo: Monthly - Online or Offline (College - Need to Conduct)** - On Topics Covered. Exact Dates will be announced later
 - a. Either Team or Individual - All Projects should be different in either Problem Statement or tool/libraries or datasets or domain
 - b. Problem statements - Should be selected from our list or students can propose themselves
 - c. Presentation Template, Project Report Template will Be share
 - d. Project Evaluation - Peer Evaluation and Faculty Evaluation will Be shared
11. **Hackathon - 4**
 - a. Online Hackathon/Participate Hackathon Suggested - Problem Statements will be given and Final Demo - Online
12. **Research Paper - 3**
 - a. Team of 2-4 Students with One College Faculty - Topics provided by us
 - i. Students have to work in collaboration with Faculty
 - ii. PragyanAI will be One Author and PragyanAI will not pay paper publication Fee
13. **Mock Interviews - Tech, HR and GD**
14. **Career Mentorship - How to Crack Interviews**
15. **Profile Building - Resume, Linkedin, Github**
16. **DSA & Core CSE Concepts Refresh (2 Weeks - Online Complementary)**
17. **Aptitude and SoftSkill (2 Weeks - Online - Complementary)**



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18. Evaluation

- a. Assignments
 - i. Coding & Project Based
 - ii. MCQ & Key Concept(Subjective) - Video (Clips - Explaining Concept - Self Recorded)
- b. Exam
 - i. Project Challenge - Need to Submit - in 2-3 Weeks

19. Placement Drive - Starts - Completes with All Placed

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8TH SEMESTER SKILL ROADMAP

Advanced Deep Learning, Computer Vision & NLP/AI Bots Mastery



GENERATIVE AI & AGENTIC & AGENTIC AI



Foundation

Transformer Architecture, SAMI, SLM, Ethical Concerns.

Large Language Models



GenAI, LLM, MLM, MLMA, GPT, Gemini, Fine-Tuning, LLOftA, PEFT, RAG, QGAI, QPFT, CRAG, LLMOps

Prompt Engineering



Zero/Few-shot, CO, React, Guardailon, Optimisation, Optimizatin, Llmaindex, Domain-Specific Marketing/Pipe, Tll Coding



Agentic AI

Conception, Architecture, Memoch Agent Agent, Marketion (2-3 Live Projects)



Case Studies

Multi-source Medical Imaging, Satellite, Healthcare Assistant, Analytic Assistant, Smart FuseFusion

AI-POWERED MVP DEVELOPMENT



MVP & Prototyping

Design Thinking, Lean Startup, Rapid Idea Validation



Project Management

User Research, Journey Mapping, Cross-functional Teams



Design Thinking

Pre-Trained Models (HuggingFace, OPEAI), Wireframing, Human-centered Design, (2-3 UVs, Figma)



Web & Low-code Cobile Dev

No-code/Low-code Tools, Glide, WebFlow, Figma, Glide, WebGifet, Rocket, Fireflare



Deployment & Scaling

AI Chatbot (EdTech), Personal Finance App, Personalize App, Multi-Agent Tutor (2-3 Live Projects)

PROJECT-BASED LEARNING



Monthly Project Demos (Online/Offline), Team/Individual, Final Year Project (External Guide)



Assignment / Avoiced, MOOC & Key Concepts (External Guide)

EVALUATION



Exam, Project Challenge (2-3 Weeks), (forel Dörling, Tech, Hf Spis)



Hackathon - 4



Mock Interviews, Tech, HR, GD, GD, GO, Prof% Placemer (DDSA, 4-30 LPA Salary Range)



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Placement

Dedicated Career Support:

- Profile Building: Professional guidance on creating impactful Resumes, LinkedIn profiles, and GitHub portfolios.
- Mock Interviews: 4 Technical, 2 HR, and Group Discussion sessions to prepare students for rigorous hiring processes.
- 1:1 Career Mentoring: Personalized guidance on how to crack interviews.
- Foundation Refreshers: Complementary 2-week modules on DSA & Core CSE Concepts and Aptitude & Soft Skills.

Target Roles

By the end of the program, students will have moved beyond entry-level positions. They will be qualified for roles such as:

- **AI Specialist / ML Engineer:** Designing, building, and deploying machine learning models for specific business problems.
- **AI Solution Architect:** A key role that involves designing end-to-end AI systems, selecting the right technologies, and ensuring the solution is scalable, reliable, and secure.
- **Data Scientist (Advanced):** Focusing on complex predictive modeling, statistical analysis, and extracting insights from large datasets to drive business decisions.
- **AI Product Manager:** For students who excel in the product management modules, this role involves defining the vision, strategy, and roadmap for AI-powered products.
- **MLOps Engineer:** Specializing in the operational side of machine learning, including automating the deployment, monitoring, and management of ML models in production.

Target Companies



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The program's blend of theoretical knowledge and practical, hands-on experience (especially the Year 4 internship and capstone project) makes graduates attractive to a wide range of companies, including:

- **Big Tech (Product-Based Companies):** Google, Microsoft, Amazon, Meta, etc., for roles in their AI research and product divisions.
- **IT Services & Consulting Giants:** Companies like TCS, Infosys, Wipro, Accenture, and Deloitte, for their AI centers of excellence and consulting practices.
- **Global Capability Centers (GCCs):** The R&D and innovation hubs of large multinational corporations (e.g., Target, Walmart Labs, financial institutions) that are heavily investing in AI.
- **High-Growth AI Startups:** Well-funded startups that are building innovative AI products and need skilled engineers and architects to scale their solutions.
- **Domain-Specific Companies:** Businesses in sectors like FinTech, HealthTech, E-commerce, and Manufacturing that are actively hiring AI talent to build specialized solutions.

Why Does This Curriculum Leads to Strong Placements?

- **Practical Experience:** Students graduate with significant, real-world work experience.
- **Strong Portfolio:** The "Projects + Research + Real World Capstone Projects" provides a tangible, complex project that students can showcase to potential employers.
- **Advanced, In-Demand Skills:** The curriculum covers cutting-edge topics like Agentic AI, MLOps, and domain-specific solutions, which are highly sought after in the industry.
- **PragyanAI's Career Support:** The dedicated career prep in the final semester, including mock interviews and resume workshops, ensures students are well-prepared for the hiring process.



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Program Comparison

Feature	MCP (3-Year Hybrid Program)	UpGrad (AI/ML Programs)	NxtWave / Masai / Simplilearn (Bootcamps, Job Programs, Certifications)
Duration & Hours	~36 months; 2000+ hours (550+ offline hours across 6 semesters + 1500+ live online sessions).	Typically 5–18 months; 250–600 hours depending on specialization	Short-term bootcamps (4–9 months) or job-ready crash courses, ~200–400 hours.
Projects & Capstones	150+ projects across all 8 AI domains + 3–5 real-world capstones (research-driven, industry-linked, hackathon-ready).	~10 projects/capstones, plus case studies	Few projects; focus on basic assignments, job-oriented coding tasks; capstone rarely at research/enterprise level.
Delivery Mode	Blended learning: Full-day offline semesters + weekly online sessions + hackathons.	Primarily online; occasional residencies or immersion weekends.	Mostly online, self-paced or live bootcamps; little or no offline engagement.

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Cost Structure	₹60K upfront (₹10K/semester × 6) + income-linked pay-after-placement model. Placement fees based on CTC.	₹1–5 Lakhs upfront, no income-share model.	₹1L-3L bootcamps (Simplilearn, NxtWave, Masai); typically upfront or EMI-based, no income-share refund model.
Placement Guarantees	100% placement guarantee; structured refunds if not placed within 6 months post-program. Built-in mock interviews, projects, hackathons.	No formal refund/guarantee; some student reports raise concerns about actual placement outcomes .	Mixed results; some “placement assistance” offered but outcomes vary widely; mostly transparent only up to job interview support.
Risk Mitigation	Refund after semester 3 if a student opts out; pay-after-placement ensures fairness and shared risk.	No refund or opt-out after payment. Risk borne entirely by students.	No refunds; some with steep penalties for withdrawals.
Institutional Benefits	Designed for college integration: Faculty engagement, joint research, final-year projects, hackathons, student showcases.	Minimal institutional collaboration; focus on individual learners only.	Very limited institutional integration; focus on direct-to-student skilling.



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Skill Coverage	Full stack Python, ML/DL, NLP, CV, Generative AI, Agentic AI, MCP integration, deployment, research exposure.	Strong coverage of ML/DL & data science; limited Generative AI/Agentic AI depth.	Mostly coding, ML basics, and placement-ready interview prep.
Unique Edge	Hybrid + affordable + placement-backed + research + 3-year deep journey.	Good for working professionals, short timeline.	Quick, job-focused; not comprehensive.

Why Should a College Engage in This Partnership?

Engaging with this program allows a college to leapfrog traditional education models and become a leader in AI. The key benefits are:

- **Elite Branding & Student Attraction:** Partnering with an AI industry leader like PragyanAI instantly elevates the college's brand, making it a top destination for high-caliber students who want a future-proof education.
- **Drastically Improved Placement Outcomes:** The job-focused track, with its mandatory internship and direct industry connections, is designed to secure graduates premium roles at top tech companies, significantly boosting placement statistics.
- **Boosted Research & Innovation Profile:** The AI Scholar track and the collaborative support ecosystem will increase the volume and quality of research papers, patents, and grant-funded projects, enhancing the institution's academic reputation.
- **Creation of a Self-Sustaining Ecosystem:** The program fosters a vibrant ecosystem on campus. The AI support hub helps faculty win grants, the startup



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track spins off new companies, and successful alumni create a powerful network, bringing long-term value back to the college.

Benefits to Students

1. **Affordable, Low Initial Investment:** Start with ₹60K and pay the rest only after placement — reduces financial stress.
2. **Deep Domain Coverage:** From core Python Full Stack to advanced Agentic AI and MCP — rare breadth in a single program.
3. **Live-to-Practice Pipeline:** Live sessions, hands-on tools, frequent hackathons, real prototypes aligned with industry expectations.
4. **Outcome and Accountability Focus:** Placement-linked pay model aligns incentives for both students and the provider.
5. **Research & Publication Opportunities:** Built-in academic value through capstones, research papers co-authored with faculty.

Why Learn from PragyanAI?

PragyanAI - has been in training for the last 6 Years. Conducted More than 200+ workshops, Several Batches Passed out. Overall 4000+ People trained on various Course

Trainer is 25+ Industry + academic + research Experience. Developed Several Products, technically guiding several startups to develop GenAI, Agentic AI solutions. Conducted Several hackathons, Mentored startups, Jury at several hackathons. Conducted Several Faculty Development Programs. KeyNote Speaker at several AI Summits. Developed 1000+ Case Studies. Helped Developing Curriculum for various universities - including Wharton University for Executive AI program for working professionals. Written 20+ Research papers, and filed patents.

Research Experience + Innovation Experience + Product Development Experience + Training Experience (Several GenAI + AI Agentic batch/bootcamp completion experience along with Data Science, Machine Learning, Deep Learning, NLP, AI Bot Training experience. Experience of training - Engineering Students, Non Engineering



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Students, Working Professionals, Faculties of College, Students from 8th Std to 12th Std.)

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Final Takeaway:

Master's Certificate Program (MCP) is not just another certification — it's a three-year transformational journey designed for deep skill-building, project immersion, and assured outcomes. Unlike other programs that may deliver short-term content and uncertain placements, MCP delivers:

- **Intense academic rigor**
- **Robust, outcome-based finance model**
- **Institutional participation and research alignment**
- **Market-leading tech depth across 8 AI domains**

Your college and students gain **sustained capability-building, placement success, and a future-ready AI ecosystem.**