EDA EDATHENA
ACADEMY

AI & ML, PGP
COURSE CURRICULUM

FOR BEGINNERS

**Frame work for Impact - Ingite your Ambitions
to provide a 360 degree online education.**

We are a career development platform providing AI & ML personalised, executive and corporate coaching in an affordable, scalable, and measurable way.

Skill gaps, lack of effective development programs, and limited accessibility to quality learning resources hinder employee growth and productivity.

Low engagement levels contribute to higher turnover rates, recruitment costs, and suboptimal business performance.

Edathena addresses these challenges by providing self-directed learning, personalized career guidance, and industry-relevant skill training, empowering employees to bridge skill gaps, stay current with evolving technologies, and adapt to change.

By offering flexible, on-demand learning options catering to diverse needs, Edathena helps organizations build a highly-skilled, engaged, and future-ready workforce, leading to improved individual and organizational success.

Sudhir Girii MS, AI & ML

Co- Founder, EdAthena Academy

Ex-Program Manager

What we do ?

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Customized Learning

Coaching to meet the specific needs and goals of both students, fresh graduates and working professionals.

Industry Focused Education

Our personalized career development tracks provide tailored guidance to help employees chart their path to success. What sets Edathena apart is our focus on industry-relevant skills through hands-on projects, case studies, and expert instruction
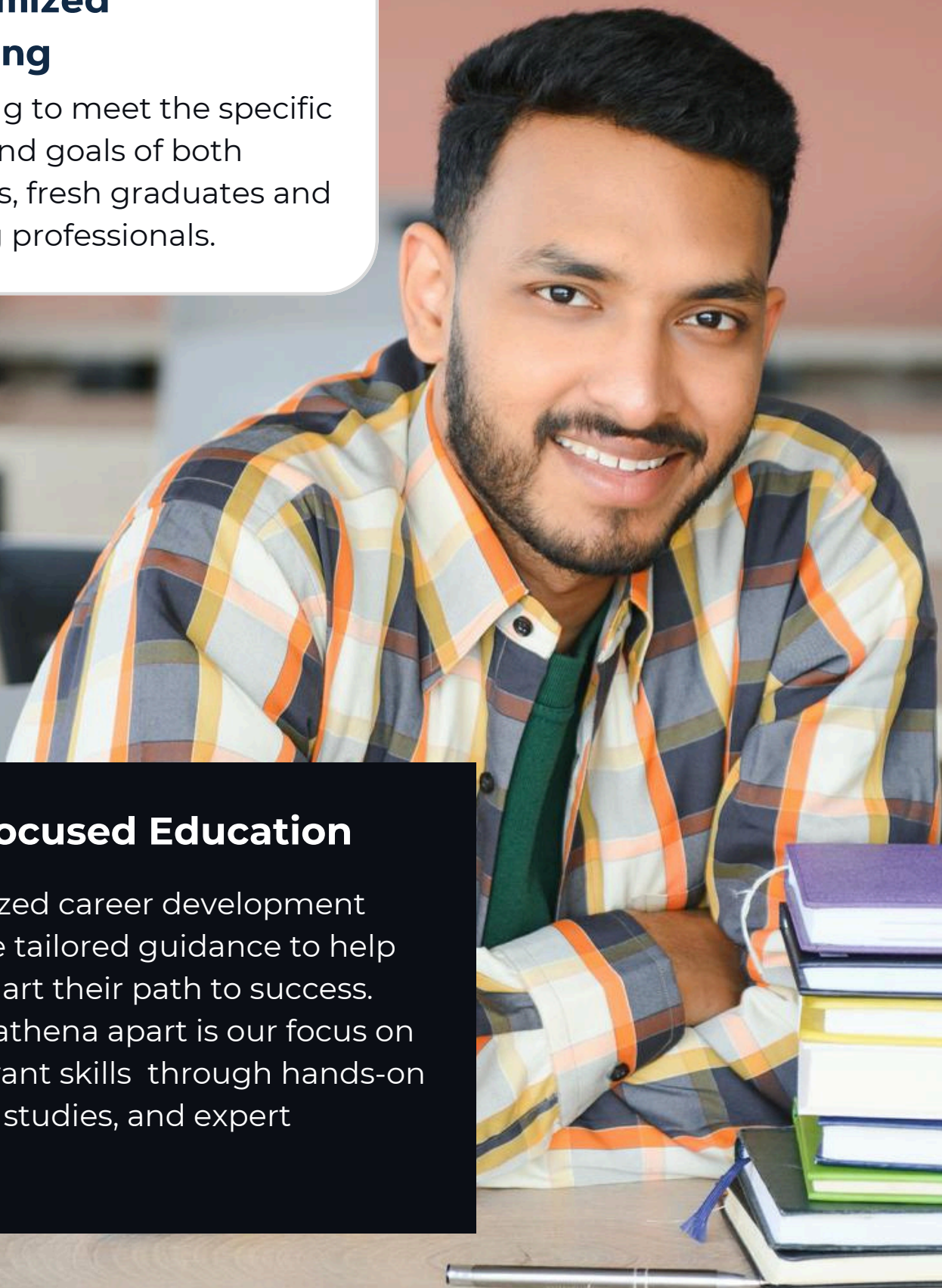
Key Features of the Program

EMPLOYEE PRIORITY
Discover your passion and career goals in AI/ML Select the appropriate course level: Beginner, Intermediate, or Advanced.

SELF DIRECTED LEARNING
Allows employees to learn at their own pace, selecting courses aligned with their interests and career goals.

EDATHENA ADVANTAGE
Provides personalized career development tracks and guidance to help employees advance their skills.

INDUSTRY RELEVANT SKILLS
Acquire practical, in-demand skills that directly apply to real-world data science and AI challenges. enhancing your marketability.

IGNITE Framework

By leveraging **IGNITE framework** and the stackable AI/ML course structure, Edathena can empower learners to achieve their unique goals, gain in-demand skills, and carve out a successful career in this exciting field.

IDENTIFY ASPIRATIONS
Discover your passion and career goals in AI/ML
Select the appropriate course level: Beginner, Intermediate, or Advanced.

GROW CAPABILITIES
Learn through a cutting-edge blend of online and live classes. Benefit from flexible, learner-driven live sessions that address your unique questions.

NAVIGATE REAL WORLD CHALLENGES
Engage in industry-relevant projects and case studies Participate in live tests that provide a comprehensive learning experience.

IMPLEMENT KNOWLEDGE
Apply your skills to solve actual business problems Develop a strong portfolio of AI/ML projects Gain practical experience.

TRACK PROGRESS
Receive continuous feedback and support from expert instructors Undergo 360-degree evaluations to assess your AI/ML competencies.

ELEVATE CAREER IMPACT
Get connected with top AI/ML job opportunities through Edathena's industry network Land your dream AI/ML role and make a real impact in the field

Course Learning
Outcomes

Learning outcomes focus on the progressive development of AI/ML skills, from building a strong foundation to applying knowledge in practical settings and ultimately gaining specialized expertise.

Develop a solid foundation in AI and ML concepts, terminology, and basic programming skills to prepare for more advanced topics

Apply AI and ML techniques to real-world problems, build and evaluate models, and gain hands-on experience

Specialize in cutting-edge AI and ML subfields, such as deep learning, NLP, CV and develop expertise in implementing advanced algorithms.

Learner Support
Ecosystem

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Expert Mentorship

Connect with experienced AI/ML practitioners who provide guidance, insights, and career advice

Peer Learning Community

Engage with a diverse community of learners, fostering collaboration, knowledge sharing, and networking opportunities

Industry Partner Projects

Work on real-world AI/ML challenges in partnership with leading companies and organizations.

Personalized Learning Paths

Receive customized course recommendations based on your goals, skills, and learning style.

Lifelong Learning Resources

Access a curated library of AI/ML resources, including research papers, tutorials, and industry updates, to stay current in the field.

Learning Path

Progression from fundamental skills to advanced expertise, incorporating hands-on experience, specialized knowledge, and continuous learning opportunities, empowering students to become well-rounded AI/ML professionals equipped to tackle real-world challenges and excel in their careers.

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Learning Path

The Learning Path at Edathena is a comprehensive journey designed to transform aspiring AI/ML enthusiasts into industry-ready professionals. The journey begins with a strong emphasis on mastering the foundational concepts, programming languages, and tools that form the bedrock of success in the field. Students engage in interactive lessons, coding exercises, and quizzes to gain a deep understanding of the core principles and techniques.

As learners progress, they transition from theory to practice by applying their newly acquired knowledge to real-world scenarios through a series of hands-on projects and case studies. These practical assignments are carefully crafted to simulate the challenges and opportunities encountered in industry settings, allowing students to develop problem-solving skills and gain valuable experience.

To cater to individual interests and career goals, Edathena offers specialized tracks in various AI/ML subfields, such as **Computer Vision, Natural Language Processing, Reinforcement Learning,** and more. Learners can dive deep into their chosen area of expertise, exploring advanced algorithms, frameworks, and cutting-edge research.

The specialized tracks are complemented by a focus on practical implementation, with students gaining proficiency in popular AI/ML tools, libraries, and cloud platforms widely used in the industry. Through collaborative projects and code reviews, learners develop the ability to work effectively in teams and adhere to best practices in software development.

The pinnacle of the learning journey is the Capstone Experience, where students bring together all the skills and knowledge acquired throughout the program. In this critical phase, learners tackle a complex, real-world business problem by developing an end-to-end AI/ML solution from scratch. This immersive experience serves as a testament to their growth and readiness to take on professional challenges.

Learning Path

The Learning Path at Edathena begins with mastering foundational AI/ML concepts, programming languages, and tools crucial for success in the field. Students then apply their knowledge to real-world scenarios through engaging hands-on projects and case studies. As they progress, learners dive deep into specialized tracks such as Computer Vision or Natural Language Processing, honing their expertise in their chosen AI/ML subfield. The pinnacle of the learning journey is the Capstone Experience, where students showcase their skills by developing an end-to-end AI/ML solution for a complex business problem. To ensure continuous growth, Edathena provides curated resources, workshops, and community events, keeping learners updated with the latest advancements in the ever-evolving AI/ML landscape.

AI/ML Essentials:
Build a strong foundation in key concepts, algorithms, and programming skills.

Industry Applications:
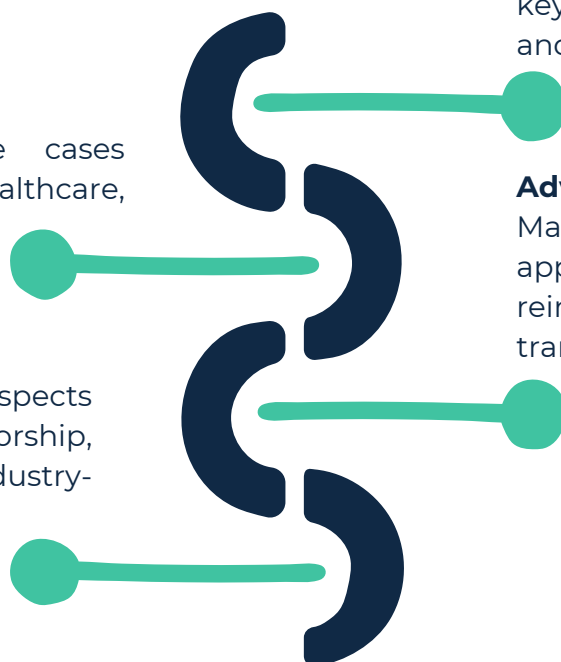Explore real-world use cases across domains like healthcare, finance, and e-commerce.

Advanced Techniques:
Master cutting-edge AI/ML approaches like deep learning, reinforcement learning, and transfer learning.

Professional Growth:
Enhance your career prospects through mentorship, networking, and industry-recognized certifications.

Post Graduate Program

Python | SQL | Data Visualization | Statistics

This foundational module covers core programming skills in Python and SQL, along with the basics of data visualization. Learners will gain hands-on experience manipulating data, writing efficient queries, and creating insightful visual representations. A solid grounding in statistics equips students to understand and apply key concepts throughout the AI/ML journey.

2 Months

Python Programming Fundamentals

Basic syntax and data types | Variables, operators, and expressions | Control structures (if-else, loops) | Functions and modules | File I/O and exception handling | Object-oriented programming concepts |Libraries for data manipulation (NumPy, Pandas)

Data Structures and Algorithms

Arrays, lists, and tuples | Stacks, queues, and deques | Hash tables and dictionaries
Trees and graphs |Searching algorithms (linear, binary) | Sorting algorithms (bubble, insertion, merge, quick) | Time and space complexity analysis
Dynamic programming and recursion

SQL Queries and Database Management

Relational database concepts | Creating and manipulating tables |SELECT, INSERT, UPDATE, DELETE statements | Filtering and sorting data | Joins and subqueries | Aggregation functions | Indexing and optimization | Transactions and ACID properties

Exploratory Data Analysis and Visualization

Data cleaning and preprocessing |Handling missing values and outliers
Univariate and multivariate analysis | Correlation and covariance | Data visualization libraries (Matplotlib, Seaborn) | Bar charts, histograms, scatter plots
Line plots and time series | Heatmaps and facet grids

Descriptive and inferential statistics

Measures of central tendency (mean, median, mode) | Measures of dispersion (variance, standard deviation) | Skewness and kurtosis | Sampling techniques and distributions | Confidence intervals
Central Limit Theorem | Hypothesis testing (t-tests, ANOVA) | Correlation and regression analysis

Probability distributions and hypothesis testing

Probability basics (events, sample spaces) | Conditional probability and Bayes' theorem
Discrete distributions (Bernoulli, Binomial, Poisson) | Continuous distributions (Normal, Exponential) | Probability density functions | Null and alternative hypotheses | Type I and Type II errors | p-values and significance levels | One-sample and two-sample tests | Chi-square tests for categorical data

Post Graduate Program

Machine Learning | Supervised Learning | Unsupervised Learning

Building upon the foundational skills, this module introduces learners to the essential concepts and techniques of machine learning. Students will explore both supervised and unsupervised learning algorithms, gaining practical experience in data preprocessing, model selection, training, evaluation and fine-tuning. Hands-on projects will cement an understanding of the ML workflow.

2 Months

Machine learning concepts and workflow

Overview of machine learning tasks and applications | Types of learning: supervised, unsupervised, semi-supervised, reinforcement | Machine learning workflow: data preparation, model training, evaluation, deployment | Bias-variance trade-off and model complexity | Overfitting and underfitting

Data preprocessing and feature engineering

Handling missing values and outliers | Categorical variable encoding (one-hot, ordinal) | Feature scaling and normalization | Dealing with imbalanced datasets | Feature selection and dimensionality reduction techniques | Creating new features through transformations

Supervised learning: regression and classification

Linear regression and logistic regression | Decision trees and random forests | Support vector machines (SVM) | Naive Bayes classifiers | k-Nearest Neighbors (k-NN) | Ensemble methods (bagging, boosting) | Multi-class classification strategies

Unsupervised learning: clustering and dimensionality reduction

k-Means clustering | Hierarchical clustering (agglomerative, divisive) | DBSCAN and density-based clustering | Gaussian Mixture Models | Principal Component Analysis (PCA) | t-SNE and UMAP for data visualization

Model evaluation metrics and techniques

Accuracy, precision, recall, F1-score | Confusion matrix and ROC curve | Cross-validation techniques (k-fold, stratified) | Regularization methods (L1, L2) | Model interpretability and feature importance Bias and fairness assessment

Hyperparameter tuning and model optimization

Grid search and random search | Bayesian optimization | Gradient descent variants (batch, mini-batch, stochastic) | Learning rate scheduling | Early stopping and model checkpointing | Regularization hyperparameters (alpha, lambda) | Ensemble hyperparameters (n_estimators, max_depth)

Post Graduate Program

Deep Learning | TensorFlow | Keras

The final module dives into the exciting world of deep learning, focusing on neural networks and their applications in AI. Using popular frameworks like TensorFlow and Keras, learners will build and train deep learning models for tasks such as image classification and natural language processing. Real-world projects will showcase the power of deep learning in solving complex problems.

2 Months

Neural networks fundamentals

Biological inspiration and artificial neurons | Feedforward and backpropagation | Activation functions (sigmoid, ReLU, tanh) | Loss functions (MSE, cross-entropy) | Optimization algorithms (SGD, Adam, RMSprop) | Regularization techniques (L1, L2, dropout) | Batch normalization and gradient clipping

Convolutional Neural Networks (CNN) for computer vision

Convolutional layers and filters | Pooling layers (max, average) | Popular CNN architectures (LeNet, AlexNet, VGGNet, ResNet) | Image classification and object detection | Semantic and instance segmentation | Data augmentation techniques | Transfer learning with pre-trained CNNs

Recurrent Neural Networks (RNN) for sequence data

Vanilla RNNs and vanishing gradient problem | Long Short-Term Memory (LSTM) networks | Gated Recurrent Units (GRU) | Bidirectional and stacked RNNs | Sequence-to-sequence models and attention mechanism | Natural language processing tasks (text classification, machine translation) Time series forecasting and anomaly detection

Generative models: Autoencoders and GANs

Autoencoder architecture and latent space | Denoising and variational autoencoders | Generative Adversarial Networks (GANs) | Generator and discriminator networks | Adversarial training and loss functions | Style transfer and image synthesis | Anomaly detection with autoencoders

Transfer learning and fine-tuning pre-trained models

Concept of transfer learning and benefits | Pre-trained models (ImageNet, BERT, GPT) | Feature extraction and fine-tuning strategies | Domain adaptation and multi-task learning | Knowledge distillation and model compression | Few-shot and zero-shot learning

Deploying deep learning models in real-world applications

Model serialization and deployment pipelines | Serving models with REST APIs and web frameworks | Containerization with Docker | Cloud platforms for model deployment (AWS, GCP, Azure) | Model monitoring and performance tracking | Scalability and load balancing considerations | Continuous integration and continuous deployment (CI/CD)

Career Services

At Edathena, we are committed to supporting our learners throughout their AI/ML learning journey and beyond. Our dedicated Career Services team provides personalized guidance, resources, and opportunities to help you achieve your professional goals in the field of artificial intelligence and machine learning.

Career Services

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Interview Preparation and Mock Interviews

- Workshops on effective interviewing techniques and common AI/ML interview questions
- Personalized mock interviews with industry experts to hone your skills and boost confidence
- Detailed feedback and tips for improvement to increase your chances of success

Job Search Support

- Access to a curated job board featuring AI/ML opportunities from our industry partners
- Personalized job recommendations based on your skills, experience, and career preferences
- Referrals and endorsements to help you stand out in the competitive job market

Networking Opportunities

- Exclusive access to Edathena's alumni network of AI/ML professionals across various industries
- Invitations to industry events, conferences, and webinars to expand your professional network
- Facilitated introductions to potential mentors, collaborators, and employers in the AI/ML space

✓ One-on-one career counseling sessions to align your learning path with your career aspirations

✓ Assistance in developing a targeted job search strategy and action plan

✓ Guidance on crafting compelling resumes, cover letters, and online professional profiles

✓ Workshops on trending AI/ML topics, industry best practices, and emerging technologies

✓ Sessions on effective communication, leadership, and teamwork skills for AI/ML professionals

✓ Guidance on continuous learning and upskilling strategies to stay ahead in the field

Certificates

Upon successful completion of the Edathena AI/ML for Beginners program, learners will be awarded the following certificates to recognize their achievement and demonstrate their newly acquired skills to potential employers:

⭐ **Edathena AI/ML PGP**

Edathena AI/ML PGP, is awarded to learners who complete all course modules, assessments, and capstone projects Verifies mastery of foundational AI/ML concepts, techniques, and tools. Showcases proficiency in Python programming, data preprocessing, machine learning algorithms, and deep learning fundamentals

⭐ **Specialization Certificates**

Highlights your capstone projects and real-world applications of AI/ML techniques Serves as a tangible showcase of your practical experience and problem-solving abilities Valuable asset during job interviews and professional networking opportunities.

Edathena's certificates are designed to provide recognition for your achievements, validate your skills, and differentiate you in the competitive AI/ML job market. Our certificates are secure, verifiable, and shareable, allowing you to easily showcase your qualifications to potential employers and colleagues in the field.

Course Fee Structure

At Edathena, we offer a transparent and flexible payment structure, allowing you to invest in your education and future career growth.

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Fees Structure

At Edathena, we offer a comprehensive and affordable AI/ML for Beginners program designed to equip you with the essential skills and knowledge needed to succeed in the field. Our pricing structure is transparent and flexible, allowing you to invest in your education and future career growth.

Program Fees

Foundations of AI/ML	₹41,667
Machine Learning Essentials	₹41,667
Deep Learning and Real-world Applications	₹41,667

We offer flexible payment options to make our program accessible and affordable for learners from diverse backgrounds:

1. **Upfront Payment:** Pay the full program fees of ₹1,25,000 upfront and receive a 5% discount on the total cost.
2. **Installment Plans:** Choose from our 3-month or 6-month plans to spread the cost of the program over a longer period. Our instalment plans are interest-free and designed to fit your budget.
3. **Financing Partners:** We have partnered with leading financing companies to offer low-interest student loans for our AI/ML for Beginners program. Our financing partners provide easy application processes, quick approvals, and flexible repayment terms.

Fee Structure

₹ 1,25,000

✓ Installment Plans
✓ Financing Partners

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Scholarships

At Edathena, we believe that financial constraints should not be a barrier to accessing quality education. We offer merit-based scholarships and need-based financial aid to deserving learners who demonstrate exceptional potential and financial need.

To learn more about our scholarship and financial aid opportunities, please visit our website or contact our admissions team.
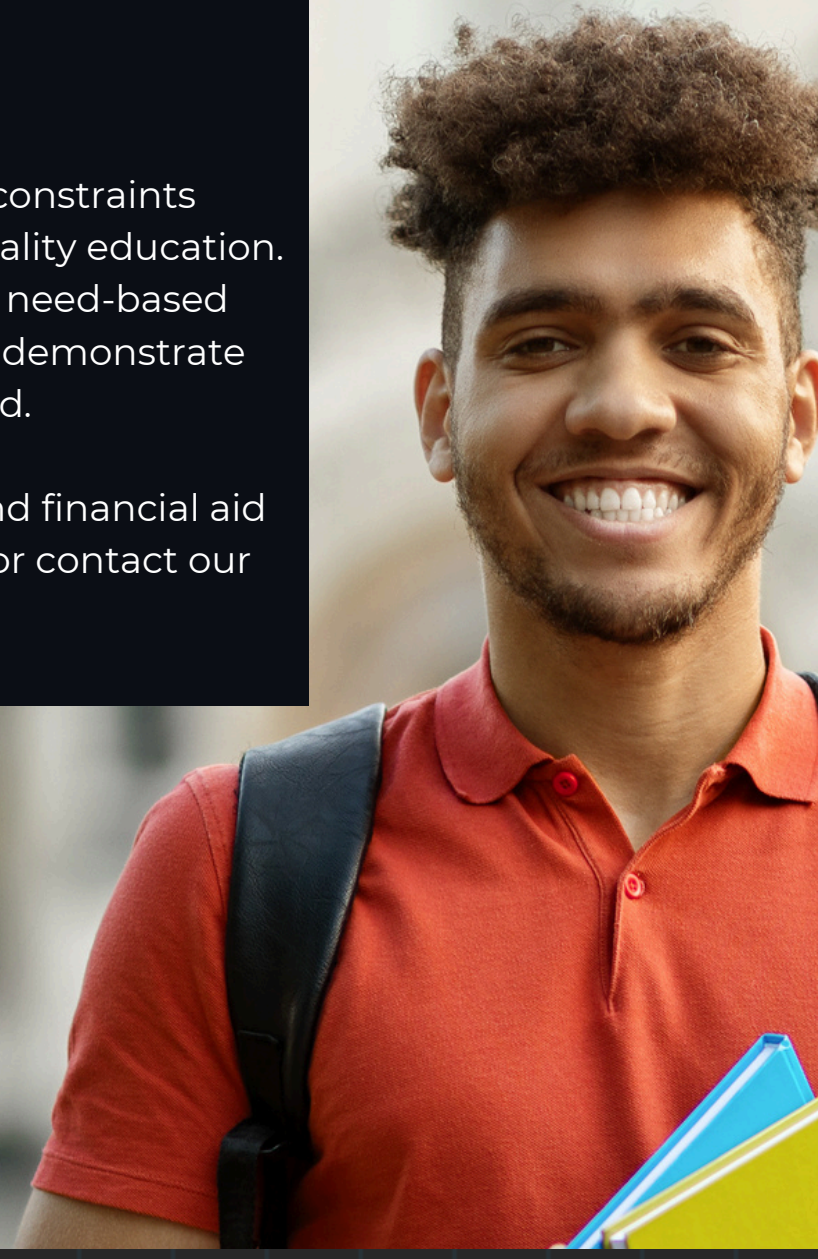
EdAthena's Management Team

Sudhir Giri, Co-Founder
Sudhir brings over 18 years of extensive experience in the IT industry, with expertise spanning product development, program management, coding, and IT delivery. His deep understanding of the technology landscape and passion for education drive Edathena's mission to bridge the skill gap in the AI/ML domain. Sudhir holds a Master's degree in Artificial Intelligence and Machine Learning.

SUDHIR GIRI

Co–Founder

Sudaroli Murugan, Co-Founder
Sudaroli is a seasoned professional with more than 10 years of experience in Operational Excellence and Program Management. Her keen eye for process optimization and talent for effective project execution ensure that Edathena delivers a seamless and transformative learning journey for its students.

Together, Sudhir and Sudaroli bring a wealth of industry knowledge, educational expertise, and operational excellence to Edathena. Their shared vision and complementary skills form the foundation of Edathena's innovative approach to AI/ML education.

SUDAROLI MURUGAN

Co–Founder