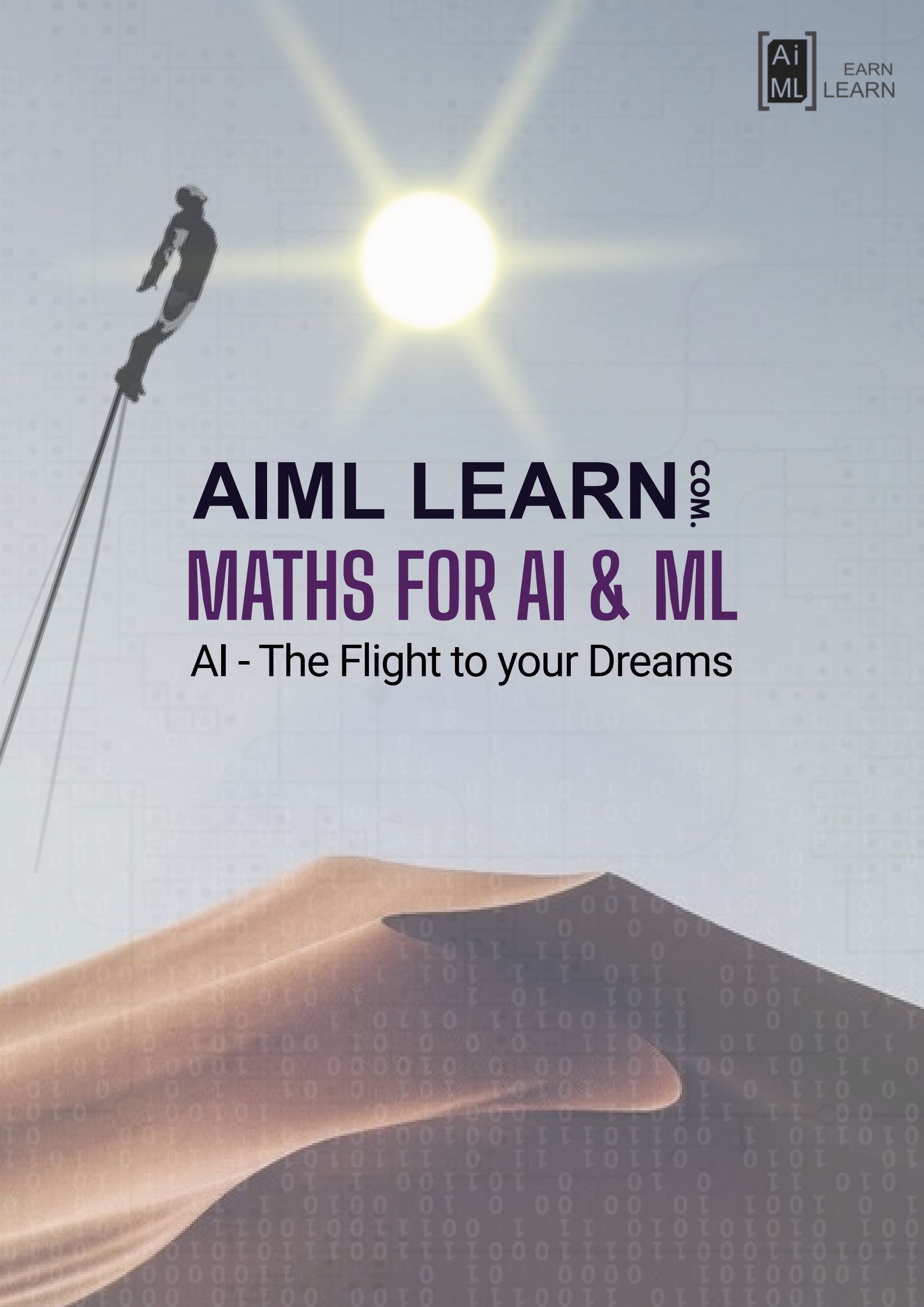




AIML LEARN^{COM.}

MATHS FOR AI & ML

AI - The Flight to your Dreams

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Industry Landscape

The Flight to your Dreams

The AI industry needs professionals who can build efficient and scalable systems while applying AI to real-world problems. By combining **strong technical skills** with responsible **practices**, learners can stand out in this fast-growing field.



\$665.7 billion

Expected size of the big data and analytics market by 2030



27.6% - CAGR

Expected CAGR of the global data analytics market From 2023 To 2030



\$4.4 trillion

Expected value added by Generative AI to the global economy annually.



\$667.9 billion

Estimated Generative AI market size by 2030, growing at a CAGR Of 47.5%



₹9,57,470

The average annual salary of a data analytics professional in India

Course Summary

This 4-week course focuses on establishing a strong grasp of the mathematical foundations behind ML. Learners get a structured review of key mathematical areas, starting with Linear Algebra, Probability Basics, Statistics, Calculus and its application to the math of gradient descent, along with Optimization Methods and Information Theory.

Learn the mathematics that powers Ai & ML and become a master at solving any problem in any domain.



Course Duration:

4 weeks -twice weekly



Instructor Support:

Live sessions and Q&A opportunities



Mode:

Online





Modules

What will you learn?



Module 1: Linear Algebra for ML

- Scalars, vectors, matrices, tensors.
- Matrix operations: addition, multiplication, transpose.
- Inverse, determinant, rank, trace.
- Eigenvalues and eigenvectors.



Module 2: Probability Basics

- Sets, events, sample spaces.
- Conditional probability, independence.
- Bayes' theorem and applications.
- Random variables, expectation, variance.
- Common distributions: uniform, binomial, normal, Poisson.



Module 3: Statistics for ML

- Descriptive statistics: mean, median, mode, variance.
- Correlation and covariance.
- Hypothesis testing (null/alternative hypotheses).
- p-values and significance.
- Confidence intervals.



Module 4: Calculus for ML

- Functions, limits, derivatives.
- Partial derivatives and gradients.
- Chain rule and multivariable calculus.
- Taylor expansion (intuition).



Module 5: Optimization Methods

- Convex functions and optimization landscape.
- Gradient descent and its variants (stochastic, mini-batch).
- Convergence and learning rate intuition.
- Regularization: L1/L2 norms.



Module 6: Information Theory & Wrap-Up

- Entropy, information gain.
- Cross-entropy, KL divergence.
- Relevance in decision trees, clustering, and neural nets.
- Review and integration of math topics.



Who Should Enroll?

Learners Who Will Benefit the Most



Learners who know Python but struggle with ML math intuition.



College students prepping for AI internships or research.



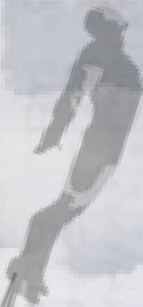
Working professionals shifting from software / analytics to AI.



Self-taught learners who got stuck when math showed up in ML.



Founders or product builders who want to truly understand how AI models work — not just use them.



Course Outcomes

Reach New Heights



Data Science and Artificial Intelligence/Machine Learning

- Data Scientist
- Machine Learning Engineer
- AI Research Scientist (or Research Engineer)



Quantitative Analysis and Financial Modeling

- Quantitative Analyst (Quant)
- Actuary/Risk Analyst
- Financial Modeler/Economist



Operations Research and Applied Mathematics

- Operations Research (OR) Analyst
- Applied Mathematician/Computational Scientist
- Signal Processing/Computer Vision Engineer

Certification & Assistance

Once you're done with the complete course you will receive a **Certificate** from AIML learn.



Certificate

Ecosystem That Supports Your Success



Pause & Resume from the nearest milestone and get credit back after resuming the course

Doubt-solving sessions to work on your problems and learn from the mistakes of your peers

Get **portfolio of projects** to highlight your skills and projects to impress top employers.

We help you crack the code to **ace interviews** by guiding you through key concepts, problem-solving techniques, and real-world scenarios.

Access all **class recordings for 1 yr** to review lessons and reinforce your learning. Never miss a session and revisit key concepts.



Applications & Project :

Linear Algebra for ML

Applications in ML : Data as matrices, PCA intuition.

Hands-on with NumPy : implementing vector/matrix operations.

Probability Basics

Applications: Naive Bayes classifier intuition.

Mini-project: Probability simulation with Python.

Statistics for ML

Applications: Model evaluation metrics, A/B testing.

Mini-project: Analyzing real dataset (Titanic/Penguins) with stats.

Calculus for ML

Applications: Gradient descent math.

Hands-on with NumPy: Implementing numerical derivatives.

Optimization Methods

Mini-project: Implement linear regression with gradient descent from scratch.

Capstone Project

Apply math concepts to implement logistic regression or decision trees from scratch.

Faculty & Advisors

The Fight to your Dreams

At Aimllearn, we deliver in-depth AI and ML education, guided by experienced educators and business leaders with 30+ years of expertise.



SHRIRANG KARANDIKAR

Shrirang is a doctorate (PhD.) from USA.

A passionate educator and team builder, having worked over 30 years in the fields of advanced computational technologies companies like Intel, I.B.M, and Shell. He has 7 patents, 40 peer publications



Hear From Our Learners



Venkatesh Shaligram

Experience : Currently pursuing my graduation Btech. MIT Pune

Place: Pune

"I went to the institute to meet Dr. Karandikar sir. His Profiles, 35 years of experience is not a small deal. I was very impressed by the conversation we had and decided I have to study under him. If you're serious about AI, if you're also tired of superficial YouTube videos and you want a mentor who can really guide you, there's no better place than AIML. You should and you must join AIML if you really wanted to learn the concept of AI."

Pritesh

Industry: Software / IT | Experience: 11+ years as Full Stack Developer

Place: Pune

"I've been thinking of starting an agricultural based startup and would be working with sir in the future. This course is itself helping me to make a base for my AI future. People who are thinking of learning and developing their careers in AI must visit AIML Learn."



Sanika

Professional : 10 yrs experience | Industry: Pharmaceuticals

Place: Pune

"It's magical how he teaches. I had a lot of fears about AI and ML, because I'm not from that background. But he really sat me down and told me that it's just a bunch of puzzles that I would like to solve. He always makes sure that we learn each and everything. And he has vast experience. I think that helps a lot in giving proper content context"



Akash

Professional : 10 yrs experience | Industry: It- gaming, Game Developer

Location : Pune

"It's been a wonderful journey of learning. I really like how sir personally talks with you and like Any doubts you have, he clears with you. It's been a good journey right now. I definitely would like to learn more and more from sir when possible."





START YOUR AI & ML JOURNEY TODAY !

AI - THE FLIGHT TO YOUR DREAMS

Apply now

