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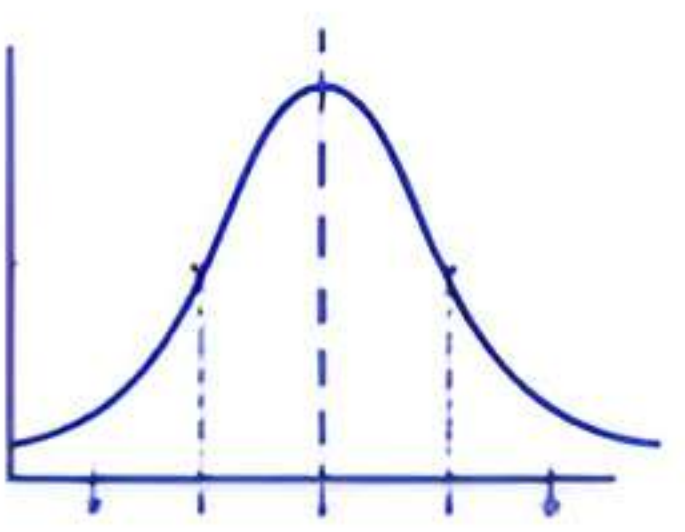
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$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix}$$

$$P(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

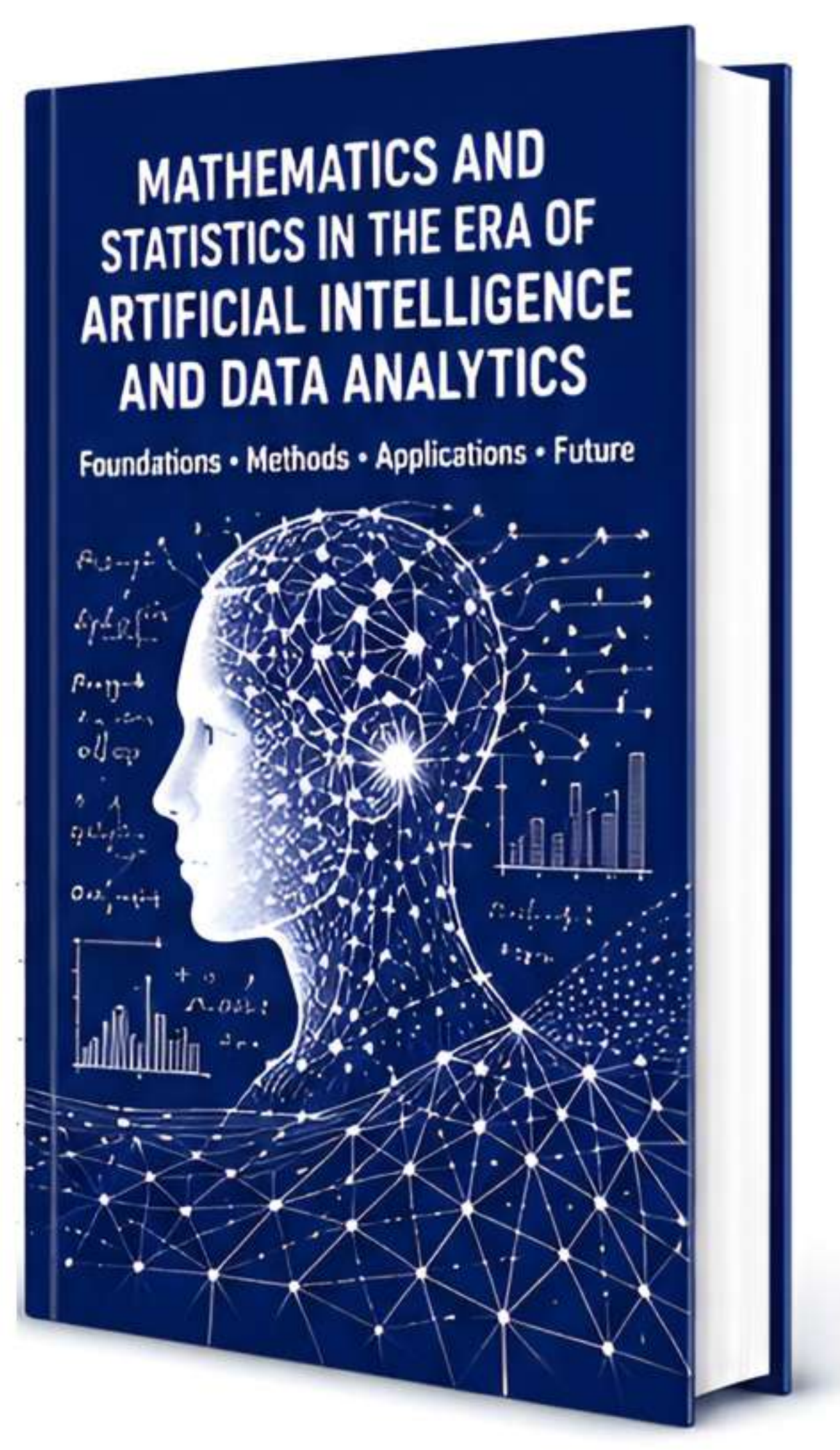
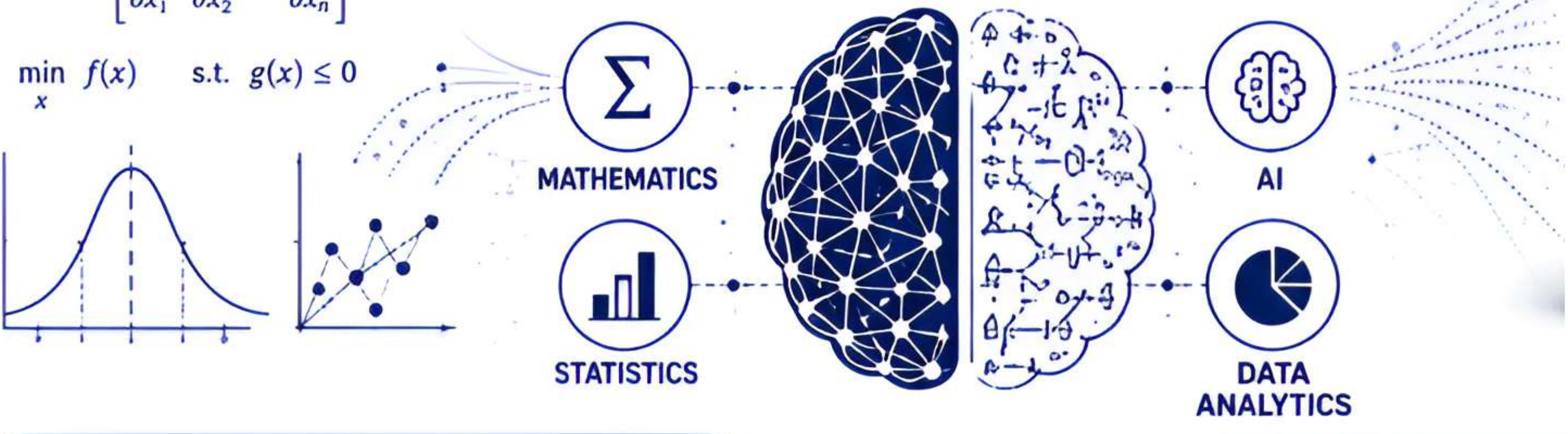
$$\nabla f(x) = \left[\frac{\partial f}{\partial x_1}, \frac{\partial f}{\partial x_2}, \dots, \frac{\partial f}{\partial x_n} \right]^T$$

$$\min_x f(x) \quad \text{s.t.} \quad g(x) \leq 0$$



IN THE ERA OF ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS

An Edited book with **ISBN e-ISBN DOI**



ABOUT THE BOOK

Mathematics and Statistics in the Era of Artificial Intelligence and Data Analytics explores the mathematical and statistical foundations powering AI, Machine Learning, and modern data-driven technologies. The book bridges theory and applications, demonstrating how mathematics and statistics drive intelligent decision-making systems across diverse domains. It provides a multidisciplinary perspective on the integration of mathematics, statistics, and modern data-driven technologies.

EDITORS



1 Dr. L. SIVAKAMI
Associate Professor & Head
Department of Mathematics & Statistics
Faculty of Science & Humanities
SRM Institute of Science & Technology
Kattankulathur,
Chengalpattu District,
Tamilnadu, India
✉ sivakam@srmist.edu.in



2 Dr. S. LAKSHMIPRIYA
Assistant Professor Grade 1
Department of Mathematics & Statistics
Faculty of Science & Humanities
SRM Institute of Science & Technology
Kattankulathur,
Chengalpattu District,
Tamilnadu, India
✉ lakshmis3@srmist.edu.in

THEMES / TOPICS (KEY AREAS TO BE COVERED)

- | | | |
|---|---|---|
| <p>1. FOUNDATIONS OF MATHEMATICS FOR AI & DATA SCIENCE</p> <ul style="list-style-type: none"> Linear Algebra & Matrix Computations Calculus & Optimization Techniques Differential Equations & Modeling Numerical Methods & Scientific Computing | <p>2. STATISTICAL FOUNDATIONS OF DATA ANALYTICS</p> <ul style="list-style-type: none"> Probability Theory & Random Variables Statistical Inference & Hypothesis Testing Regression Analysis & Predictive Modeling Multivariate Statistical Methods | <p>3. MACHINE LEARNING & MATHEMATICAL FRAMEWORKS</p> <ul style="list-style-type: none"> Supervised & Unsupervised Learning Optimization Algorithms in ML Statistical Learning Theory Feature Selection & Dimensionality Reduction |
| <p>4. ARTIFICIAL INTELLIGENCE & COMPUTATIONAL INTELLIGENCE</p> <ul style="list-style-type: none"> Neural Networks & Deep Learning Fuzzy Logic & Intelligent Systems Evolutionary Computing & Swarm Intelligence Reinforcement Learning | <p>5. DATA ANALYTICS & BIG DATA TECHNOLOGIES</p> <ul style="list-style-type: none"> Data Preprocessing & Data Quality Exploratory Data Analysis Big Data Analytics Techniques Data Visualization & Interpretation | <p>6. MATHEMATICAL & STATISTICAL MODELING IN AI APPLICATIONS</p> <ul style="list-style-type: none"> Healthcare Analytics & Medical Diagnostics Financial Modeling & Risk Analysis Engineering & Industrial Applications Environmental & Climate Data Analytics |
| <p>7. ADVANCED TOPICS IN AI & DATA SCIENCE</p> <ul style="list-style-type: none"> Explainable Artificial Intelligence (XAI) Quantum Computing & AI Integration Generative AI & Large Language Models Graph Theory & Network Analytics | <p>8. ETHICS, SECURITY & RESPONSIBLE AI</p> <ul style="list-style-type: none"> Ethical Issues in AI & Data Analytics Privacy-Preserving Data Analysis Bias, Fairness & Transparency in AI Governance & Regulatory Frameworks | <p>9. FUTURE DIRECTIONS & EMERGING RESEARCH</p> <ul style="list-style-type: none"> AI-Driven Scientific Discovery Mathematical Challenges in Next-Gen AI Interdisciplinary Research Opportunities Future Trends in Data Analytics & Intelligent Systems |

IMPORTANT DATES

- CHAPTER SUBMISSION DEADLINE**
30 JULY 2026
- NOTIFICATION OF ACCEPTANCE**
20 JULY 2026
- FINAL CHAPTER SUBMISSION**
15 AUGUST 2026
- EXPECTED PUBLICATION DATE**
30 AUGUST 2026

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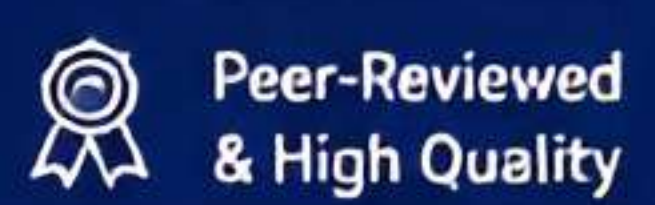
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