

1. Record Nr.	UNINA9910709528703321
Autore	Diamond J. J
Titolo	Bibliography on the high temperature chemistry and physics of materials, January, February, March 1969 // J. J. Diamond
Pubbl/distr/stampa	Gaithersburg, MD : , : U.S. Dept. of Commerce, National Institute of Standards and Technology, , 1969
Descrizione fisica	1 online resource
Collana	NBS special publication ; ; 315-1
Altri autori (Persone)	DiamondJ. J
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	1969. Contributed record: Metadata reviewed, not verified. Some fields updated by batch processes. Title from PDF title page.
Nota di bibliografia	Includes bibliographical references.

2. Record Nr.	UNINA9910983060503321
Autore	Suh Changho
Titolo	Probability for Information Technology // by Changho Suh
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025
ISBN	9789819740321 9789819740314
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (359 pages)
Disciplina	004.015192
Soggetti	Computer science - Mathematics Mathematical statistics Digital media Artificial intelligence - Data processing Machine learning Probability and Statistics in Computer Science Digital and New Media Data Science Machine Learning
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Preface -- Acknowledgements -- Part I. Basic concepts of probability -- Chapter 1. Overview of the book -- Chapter 2. Sample space and events -- Chapter 3. Monty Hall problem and Python implementation -- Problem Set 1 -- Chapter 4. Conditional probability and total probability law -- Chapter 5. Independence -- Chapter 6. Coupon collector problem and Python implementation -- Problem Set 2 -- Chapter 7. Random variables -- Chapter 8. Expectation -- Chapter 9. BitTorrent and Python implementation -- Chapter 10. Variance and Chebyshev's inequality -- Problem Set 3 -- Chapter 11. Continuous random variables -- Chapter 12. Gaussian random variables -- Problem Set 4 -- Part II. Introductory random processes and key principles -- Chapter 13. Introduction to random processes -- Chapter 14. Maximum A Posteriori (MAP) principle -- Chapter 15. MAP: Multiple observations -- Chapter 16. MAP: Performance analysis -- Chapter 17.

MAP: Cancer prediction and Python implementation -- Problem Set 5 -- Chapter 18. Maximum Likelihood Estimation (MLE) -- Chapter 19. MLE: Law of large numbers -- Chapter 20. MLE: Gaussian distribution -- Chapter 21. MLE: Gaussian distribution estimation and Python implementation -- Chapter 22. Central limit theorem -- Problem Set 6 -- Part III. Information Technology Applications -- Chapter 23. Communication: Probabilistic modeling -- Chapter 24. Communication: MAP principle -- Chapter 25. Communication: MAP under multiple observations -- Chapter 26. Communication: Repetition coding and Python implementation -- Problem Set 7 -- Chapter 27. Social networks: Probabilistic modeling -- Chapter 28. Social networks: ML principle -- Chapter 29. Social networks: Community detection and Python implementation -- Problem Set 8 -- Chapter 30. Speech recognition: Probabilistic modeling -- Chapter 31. Speech recognition: MAP principle -- Chapter 32. Speech recognition: Viterbi algorithm -- Chapter 33. Speech recognition: Python implementation -- Problem Set 9 -- Appendix A: Python basics -- Bibliography -- Index.

Sommario/riassunto

This book introduces probabilistic modelling and to study its role in solving a wide variety of engineering problems that arise in Information Technology (IT). The book consists of three parts. The first introduces the basic concepts of probability: sample space, events, conditional probability, independence, total probability law, random variables, probability mass functions, density functions and expectation. In the second part, we study the concept of random processes, as well as key principles such as Maximum A Posteriori (MAP) estimation, Maximum Likelihood (ML) estimation, law of large numbers and central limit theorem. Using the language and principles acquired in the prior parts, the last discusses IT applications chosen from communication, social networks and speech recognition. The book puts a special emphasis on “probability in action”: probabilistic concepts are taught through many running examples, killer applications and Python coding exercises. One defining feature of this book is that it succinctly relates the “story” of how the key principles of probability play a role, via classical and trending IT applications. All the key “plots” involved in the story are coherently developed with the help of tightly-coupled exercise problem sets, and the associated fundamentals are explored mostly from first principles. Another key feature is that it includes programming implementation of toy examples and various algorithms inspired by fundamentals. It also provides a brief tutorial of the used programming tool: Python. This book does not follow a traditional book-style organization, but is streamlined via a series of lecture notes that are intimately related, centered around coherent storylines and themes. It serves as a textbook mainly for a sophomore-level undergraduate course, yet is also suitable for a junior or senior-level undergraduate course. Readers benefit from having some mathematical maturity and exposure to programming. But the background can be supplemented by almost self-contained materials, as well as by numerous exercise problems intended for elaborating on non-trivial concepts. In addition, Part III for IT applications should provide motivation and insights to students and even professional engineers who are interested in the field.
