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Autore	Attewell Paul A. <1949->
Titolo	Data mining for the social sciences : an introduction / / Paul Attewell and David B. Monaghan
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Descrizione fisica	1 online resource (265 p.)
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front matter -- CONTENTS -- ACKNOWLEDGMENTS -- 1. WHAT IS DATA MINING? -- 2. CONTRASTS WITH THE CONVENTIONAL STATISTICAL APPROACH -- 3. SOME GENERAL STRATEGIES USED IN DATA MINING -- 4. IMPORTANT STAGES IN A DATA MINING PROJECT -- 5. PREPARING TRAINING AND TEST DATASETS -- 6. VARIABLE SELECTION TOOLS -- 7. CREATING NEW VARIABLES -- 8. EXTRACTING VARIABLES -- 9. CLASSIFIERS -- 10. CLASSIFICATION TREES -- 11. NEURAL NETWORKS -- 12. CLUSTERING -- 13. LATENT CLASS ANALYSIS AND MIXTURE MODELS -- 14. ASSOCIATION RULES -- CONCLUSION. Where Next? -- BIBLIOGRAPHY -- NOTES -- INDEX
Sommario/riassunto	We live in a world of big data: the amount of information collected on human behavior each day is staggering, and exponentially greater than at any time in the past. Additionally, powerful algorithms are capable of churning through seas of data to uncover patterns. Providing a simple and accessible introduction to data mining, Paul Attewell and David B. Monaghan discuss how data mining substantially differs from conventional statistical modeling familiar to most social scientists. The authors also empower social scientists to tap into these new resources and incorporate data mining methodologies in their analytical toolkits.

Data Mining for the Social Sciences demystifies the process by describing the diverse set of techniques available, discussing the strengths and weaknesses of various approaches, and giving practical demonstrations of how to carry out analyses using tools in various statistical software packages.

2. Record Nr.	UNINA9910830043003321
Autore	Ouisse Thierry
Titolo	Electron transport in nanostructures and mesoscopic devices [[electronic resource] /] / Thierry Ouisse
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Soggetti	Electron transport Nanostructured materials - Electric properties Nanostructures - Electric properties Mesoscopic phenomena (Physics)
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Electron Transport in Nanostructures and Mesoscopic Devices; Table of Contents; Chapter 1. Introduction; 1.1. Introduction and preliminary warning; 1.2. Bibliography; Chapter 2. Some Useful Concepts and Reminders; 2.1. Quantum mechanics and the Schrodinger equation; 2.1.1. A more than brief introduction; 2.1.2. The postulates of quantum mechanics; 2.1.3. Essential properties of observables; 2.1.4. Momentum operator; 2.1.5. Stationary states; 2.1.6. Probability current; 2.1.7. Electrons in vacuum and group velocity; 2.2. Energy band

structure in a periodic lattice

2.3. Semi-classical approximation; 2.4. Electrons and holes; 2.5. Semiconductor heterostructure; 2.6. Quantum well; 2.6.1. 1D case; 2.6.2. Coupled quantum wells; 2.6.3. Quantum-confined Stark effect; 2.7. Tight-binding approximation; 2.8. Effective mass approximation; 2.8.1. Wannier functions; 2.8.2. Effective mass Schrodinger equation; 2.9. How good is the effective mass approximation in a confined structure?; 2.10. Density of states; 2.10.1. 3D case; 2.10.2. 2D case; 2.10.3. 1D case; 2.10.4. Summary; 2.11. Fermi-Dirac statistics; 2.12. Examples of 2D systems

2.13. Characteristic lengths and mesoscopic nature of electron transport; 2.14. Mobility: Drude model; 2.15. Conduction in degenerate materials; 2.16. Einstein relationship; 2.17. Low magnetic field transport; 2.18. High magnetic field transport; 2.18.1. Introduction; 2.18.2. Some reminders about the particle Hamiltonian in the presence of an electromagnetic field; 2.18.3. Action of a magnetic field (classical); 2.18.4. High magnetic field transport; 2.19. Exercises; 2.19.1. Exercise; 2.19.2. Exercise; 2.19.3. Exercise; 2.19.4. Exercise; 2.20. Bibliography

Chapter 3. Ballistic Transport and Transmission Conductance; 3.1. Conductance of a ballistic conductor; 3.2. Connection between 2D and 1D systems; 3.3. A classical analogy; 3.4. Transmission conductance: Landauer's formula; 3.5. What if the device length really does go down to zero?; 3.6. A smart experiment which shows you everything; 3.7. Relationship between the Landauer formula and Ohm's law; 3.8. Dissipation with a scatterer; 3.9. Voltage probe measurements; 3.10. Comment about the assumption that T is constant; 3.11. Generalization of Landauer's formula: Buttiker's formula

3.11.1. Buttiker's formula; 3.11.2. Three-terminal device; 3.11.3. Four-terminal device; 3.12. Non-zero temperature; 3.12.1. Large applied bias $V > 0$; 3.12.2. Incoherent states; 3.12.3. Coherent states; 3.12.4. Physical parameters included in the transmission probability; 3.12.5. Linear response ($V < k_B T$ or $T(E) = Cst$); 3.13. The integer quantum Hall effect; 3.13.1. The experiment; 3.13.2. The explanation; 3.14. Exercises; 3.14.1. Exercise; 3.14.2. Exercise; 3.14.3. Exercise; 3.14.4. Exercise; 3.14.5. Exercise; 3.15. Bibliography; Chapter 4. S-matrix Formalism

4.1. Scattering matrix or S-matrix

Sommario/riassunto

This book introduces researchers and students to the physical principles which govern the operation of solid-state devices whose overall length is smaller than the electron mean free path. In quantum systems such as these, electron wave behavior prevails, and transport properties must be assessed by calculating transmission amplitudes rather than microscopic conductivity. Emphasis is placed on detailing the physical laws that apply under these circumstances, and on giving a clear account of the most important phenomena. The coverage is comprehensive, with mathematics and theoretical material s
