

Contents

<i>Preface</i>	vii
1 Introduction	1
2 Likelihood analysis for spatial Gaussian processes	9
2.1 Spatial autoregressions	11
2.2 Range parameters	15
2.3 Discussion	19
3 Edge corrections for spatial point processes	22
3.1 Edge corrections for nearest neighbour methods	24
3.2 Interpoint distance methods	28
3.3 Asymptotic variances for edge-corrected estimates	35
3.4 Limit theorems for interpoint distances	44
4 Parameter estimation for Gibbsian point processes	49
4.1 Definitions	49
4.2 Local conditioning methods	52
4.3 Approximate maximum likelihood	55
4.4 Monte-Carlo approximations	62
4.5 Discussion	65
4.6 An example	67
5 Modelling spatial images	74
5.1 A general Bayesian approach	76
5.2 Markov random field models	79
5.3 Applications in astronomy	82
5.4 Application to segmentation	95
5.5 Other statistical approaches to segmentation	113

vi	<i>Contents</i>	
	6 Summarizing binary images	121
	6.1 Mathematical formulation	123
	6.2 A proposed summary	128
	6.3 Computation	130
	6.4 Examples	131
	6.5 Extensions	135
	<i>References</i>	138
	<i>Index</i>	146