

# Contents

<i>Preface to the first edition</i>	<i>page ix</i>
<i>Preface to the second edition</i>	xi
<i>Basic notation and conventions</i>	xii
<i>Introduction</i>	xv

## **Part I Information measures in simple coding problems** 1

<b>1</b>	<b>Source coding and hypothesis testing; information measures</b>	<b>3</b>
<b>2</b>	<b>Types and typical sequences</b>	<b>16</b>
<b>3</b>	<b>Formal properties of Shannon's information measures</b>	<b>34</b>
<b>4</b>	<b>Non-block source coding</b>	<b>48</b>
<b>5</b>	<b>Blowing up lemma: a combinatorial digression</b>	<b>71</b>

## **Part II Two-terminal systems** 81

<b>6</b>	<b>The noisy channel coding problem</b>	<b>83</b>
<b>7</b>	<b>Rate-distortion trade-off in source coding and the source–channel transmission problem</b>	<b>107</b>
<b>8</b>	<b>Computation of channel capacity and <math>\Delta</math>-distortion rates</b>	<b>120</b>
<b>9</b>	<b>A covering lemma and the error exponent in source coding</b>	<b>132</b>
<b>10</b>	<b>A packing lemma and the error exponent in channel coding</b>	<b>144</b>
<b>11</b>	<b>The compound channel revisited: zero-error information theory and extremal combinatorics</b>	<b>184</b>

<b>12</b>	<b>Arbitrarily varying channels</b>	<b>209</b>
<b>Part III Multi-terminal systems</b>		<b>241</b>
<b>13</b>	<b>Separate coding of correlated sources</b>	<b>243</b>
<b>14</b>	<b>Multiple-access channels</b>	<b>272</b>
<b>15</b>	<b>Entropy and image size characterization</b>	<b>304</b>
<b>16</b>	<b>Source and channel networks</b>	<b>354</b>
<b>17</b>	<b>Information-theoretic security</b>	<b>400</b>
	<i>References</i>	461
	<i>Name index</i>	478
	<i>Index of symbols and abbreviations</i>	482
	<i>Subject index</i>	485