

Contents

Foreword	vii
Preface for the 2nd Edition	xi
1 Introduction	1
1.1 A Roadmap of Information Visualization	3
1.2 Geographic Visualization	8
1.3 Abstract Information Visualization	20
1.4 Optimal Information Foraging	21
1.5 Exploring Cyberspaces	21
1.6 Social Interaction in Online Communities	22
1.7 Information Visualization Resources	24
1.8 Summary	26
2 Extracting Salient Structures	27
2.1 Proximity and Connectivity	28
2.2 Clustering and Classification	31
2.3 Virtual Structures	34
2.4 Complex Network Theory	40
2.5 Structural Analysis and Modeling	43
2.6 Generalized Similarity Analysis	52
2.7 Summary	63
3 Graph Drawing Algorithms	65
3.1 An Overview	65
3.2 Drawing General Undirected Graphs	70
3.3 Examples of Graph Drawing	81
3.4 Graph Drawing Resources	86
4 Systems and Applications	89
4.1 Trees	89
4.2 Networks	95
4.3 Spatial Information Exploration	107
4.4 Focus + Context	117
4.5 Visualizing Search Results	126
4.6 The Web and Online Communities	128
4.7 Commercial Systems	131
4.7 Online Resources	141
4.8 Summary	142

5	Knowledge Domain Visualization	143
5.1	Mapping Science	143
5.2	Author Co-citation Analysis	149
5.3	Tracking the Growth of Knowledge	154
5.4	Case Study: String Theory	159
5.5	Summary	170
6	Empirical Studies of Information Visualization	173
6.1	Introduction	173
6.2	Meta-analysis	175
6.3	Preattentive and Elementary Tasks	181
6.4	Interacting with Trees	189
6.5	Interacting with Graphs	196
6.6	2D versus 3D	199
6.7	Cognitive Abilities	202
6.8	Summary	210
7	Virtual Environments	211
7.1	Social Dimensions of Information Spaces	212
7.2	Online Communities	216
7.3	The StarWalker Virtual Environment	227
7.4	Group Tightness	239
7.5	Summary	253
8	Detecting Abrupt Changes and Emerging Trends	255
8.1	The Complexity of Abrupt Changes	255
8.2	Detecting Abrupt Changes	264
8.3	Topic Detection and Tracking	270
8.4	Visualizing Temporal Patterns	274
8.5	Intellectual Turning Points	283
8.6	Summary	296
	Bibliography	297
	Index	313



<http://www.springer.com/978-1-85233-789-6>

Information Visualization

Beyond the Horizon

Chen, C.

2006, XVI, 316 p., Hardcover

ISBN: 978-1-85233-789-6