

Contents

- Foreword** vii
- Preface** ix
- About the Authors** xi
- Acknowledgements** xiii
- 1 Introduction** 1
 - 1.1 Introduction to Visualization 3
 - 1.2 Application Example 9
 - 1.3 Book Outline 12
 - References 12
- 2 Historical Background** 15
 - 2.1 Classic Ways of Graphing Time 15
 - 2.2 Time in Visual Storytelling & Arts 35
 - 2.3 Summary 42
 - References 43
- 3 Time & Time-Oriented Data** 45
 - 3.1 Modeling Time 46
 - 3.1.1 Design Aspects 47
 - 3.1.2 Granularities & Time Primitives 53
 - 3.2 Characterizing Data 62
 - 3.3 Relating Data & Time 64
 - 3.4 Summary 65
 - References 67
- 4 Visualization Aspects** 69
 - 4.1 Characterization of the Visualization Problem 70
 - 4.1.1 What? – Time & Data 71

4.1.2	Why? – User Tasks	72
4.1.3	How? – Visual Representation	76
4.2	Visualization Design Examples	83
4.2.1	Data Level	83
4.2.2	Task Level	87
4.2.3	Presentation Level	95
4.3	Summary	99
	References	101
5	Interaction Support	105
5.1	Motivation & User Intents	106
5.2	Fundamental Principles	108
5.3	Basic Methods	115
5.4	Integrating Interactive and Automatic Methods	120
5.5	Summary	124
	References	125
6	Analytical Support	127
6.1	Temporal Analysis Tasks	128
6.2	Clustering	130
6.3	Temporal Data Abstraction	132
6.4	Principal Component Analysis	137
6.5	Summary	143
	References	144
7	Survey of Visualization Techniques	147
7.1	Techniques	148
7.2	Summary	253
	References	254
8	Conclusion	255
8.1	Summary	255
8.2	Application Issues	257
8.3	Research Challenges	259
8.4	Visual Analytics	263
	References	266
	References	269
	Index	283

Visualization of Time-Oriented Data

Aigner, W.; Miksch, S.; Schumann, H.; Tominski, C.

2011, XVI, 286 p., Hardcover

ISBN: 978-0-85729-078-6