

# Contents

<b>Table of Contents</b> .....	<b>iv</b>
<b>List of Tables</b> .....	<b>vi</b>
<b>List of Figures</b> .....	<b>ix</b>
<b>1 Introduction</b> .....	<b>1</b>
<b>2 Background, Motivation, and Previous Work</b> .....	<b>11</b>
2.1 Citation Analysis .....	12
2.2 Link Analysis .....	19
2.3 Association Mining .....	23
2.4 Information Visualization .....	25
<b>3 Clustering with Higher-Order Co-Citations</b> .....	<b>34</b>
3.1 Co-Citation Distances .....	35
3.2 Hierarchical Clustering and Dendrograms .....	44
3.3 Itemset-Matching Clustering Metric .....	56
3.4 Distances from Higher-Order Co-Citations .....	72
3.5 Clustering Experiments .....	86
<b>4 Reducing Computational Complexity</b> .....	<b>97</b>
4.1 Fast Algorithms for Frequent Itemsets .....	98
4.2 Itemset Support Distributions .....	102

4.3 Transaction and Item Weighting .....	117
<b>5 Minimum Spanning Tree with Higher-Order Co-Citations .....</b>	<b>130</b>
5.1 Minimum Spanning Tree .....	132
5.2 Minimum Spanning Tree Vertex Placement .....	134
5.3 Itemset-Matching Minimum Spanning Tree Metrics .....	143
5.4 Minimum Spanning Tree Experiments .....	159
5.5 Landscape Visualization for Minimum Spanning Tree .....	176
<b>6 Summary, Conclusions and Future Work .....</b>	<b>193</b>
6.1 Summary and Conclusions .....	193
6.2 Future Work .....	195
<b>Bibliography .....</b>	<b>199</b>
<b>Appendix A Clustering Metrics for Standard versus Hybrid Distances .....</b>	<b>205</b>
<b>Appendix B Clustering Metrics for Excluding Infrequent Itemsets .....</b>	<b>226</b>
<b>Appendix C Clustering Metrics for Transaction and Item Weighting .....</b>	<b>241</b>
<b>Appendix D Minimum Spanning Tree Itemset-Connectedness Metrics .....</b>	<b>252</b>
<b>Abstract .....</b>	<b>263</b>
<b>Biographical Sketch .....</b>	<b>264</b>