VIII - PRACTICAL DATA SCIENCE FOR INFORMATION PROFESSIONAL

## Contents

3

| Clustering and social network analysis  |   |
|---|---|
|   | ix  |
|   |   |
| oles noitealisuaiv  | xi  |
| xes alaylana showshi  | xiii  |
| face face and forecasts?  | xv  |
| What is data science?<br>Data, information, knowledge, wisdom<br>Data everywhere<br>The data deserts<br>Data science<br>The potential of data science<br>From research data services to data science in libraries<br>Programming in libraries<br>Programming in this book<br>The structure of this book | <b>1</b><br>1<br>3<br>4<br>5<br>8<br>10<br>14<br>15<br>16 |
| Little data, big data<br>Big data<br>Data formats<br>Standalone files<br>Application programming interfaces<br>Unstructured data<br>Data sources<br>Data licences   | <b>17</b><br>17<br>19<br>20<br>21<br>25<br>27<br>37       |
| <b>The process of data science</b><br>Modelling the data science process<br>Frame the problem<br>Collect data<br>Transform and clean data<br>Analyse data   | <b>39</b><br>39<br>41<br>44<br>46<br>48                   |
|   | Ites Ites Ites Ites Ites Ites Ites Ites                   |

## viii PRACTICAL DATA SCIENCE FOR INFORMATION PROFESSIONALS

|  | Visualise and communicate data<br>Frame a new problem  | 50<br>54   |
|--|--|--|
| 4  | Tools for data analysisFinding toolsSoftware for data scienceProgramming for data science  | <b>55</b><br>55<br>56<br>69                          |
| 5<br>sti<br>itist                              | Clustering and social network analysis<br>Network graphs<br>Graph terminology<br>Network matrix<br>Visualisation<br>Network analysis   | 77<br>77<br>79<br>80<br>82<br>85                     |
| 6  | <b>Predictions and forecasts</b><br>Predictions and forecasts beyond data science<br>Predictions in a world of (limited) data<br>Predicting and forecasting for information professionals<br>Statistical methodologies | <b>97</b><br>97<br>99<br>101<br>102                  |
| 7  | <b>Text analysis and mining</b><br>Text analysis and mining, and information professionals<br>Natural language processing<br>Keywords and n-grams  | <b>113</b><br>113<br>115<br>125                      |
| 8  | The future of data science and information<br>professionals<br>Eight challenges to data science<br>Ten steps to data science librarianship<br>The final word: play   | <b>133</b><br>134<br>139<br>144                      |
| Refe   | Standalone files<br>Application programming interfaces   | 147  |
| <b>qqA</b><br>27<br>37<br>39<br>39<br>39<br>44 | endix – Programming concepts for data science<br>Variables, data types and other classes<br>Import libraries<br>Functions and methods<br>Loops and conditionals<br>Final words of advice<br>Further reading            | <b>165</b><br>165<br>167<br>168<br>170<br>171<br>172 |
| Inde   | Transform and clean data   | 173  |