Tugrul U. Daim · Denise Chiavetta
Alan L. Porter · Ozcan Saritas
Editors

Anticipating Future Innovation Pathways Through Large Data Analysis

Springer

Contents

Part I Data Science/Technology Review

1 **FTA as Due Diligence for an Era of Accelerated Interdiction by an Algorithm-Big Data Duo** 3
Denis Loveridge and Cristiano Cagnin

2 **A Conceptual Framework of Tech Mining Engineering to Enhance the Planning of Future Innovation Pathway (FIP)** 25
Munan Li

3 **Profile and Trends of FTA and Foresight** 45
Per Dannemand Andersen and Lars Alkærsig

4 **Recent Trends in Technology Mining Approaches: Quantitative Analysis of GTM Conference Proceedings** 59
Nadezhda Mikova

5 **Anticipating Future Pathways of Science, Technologies, and Innovations: (Map of Science)^2 Approach** 71
Irina V. Efimenko, Vladimir F. Khoroshevsky and Ed. C.M. Noyons

Part II Text Analytic Methods

6 **Towards Foresight 3.0: The HCSS Metafore Approach—A Multilingual Approach for Exploring Global Foresights** 99
Stephan De Spiegeleire, Freija van Duijne and Eline Chivot

7 **Using Enhanced Patent Data for Future-Oriented Technology Analysis** 119
Christopher L. Benson and Christopher L. Magee

8 **Innovation and Design Process Ontology** 133
Cherie Courseault Trumbach, Christopher McKesson, Parisa Ghandehari, Lawrence DeCan and Owen Eslinger

9 **Generating Competitive Technical Intelligence Using Topical Analysis, Patent Citation Analysis, and Term Clumping Analysis** 153
Ying Huang, Yi Zhang, Jing Ma, Alan L. Porter, Xuefeng Wang and Ying Guo

10 **Identifying Targets for Technology Mergers and Acquisitions Using Patent Information and Semantic Analysis** 173
Lu Huang, Lining Shang, Kangrui Wang, Alan L. Porter and Yi Zhang

11 **Identifying Technological Topic Changes in Patent Claims Using Topic Modeling** 187
Hongshu Chen, Yi Zhang and Donghua Zhu

12 **Semi-automatic Technology Roadmapping Composing Method for Multiple Science, Technology, and Innovation Data Incorporation** 211
Yi Zhang, Hongshu Chen and Donghua Zhu

13 **Generating Futures from Text—Scenario Development Using Text Mining** 229
Victoria Kayser and Erduana Shala

Part III Anticipating the Future—Cases and Frameworks

14 **Additive Manufacturing: Importance and Challenges for Latin America** 249
Marisela Rodríguez Salvador, Ana Marcela Hernández de Menéndez and David Alfredo Arcos Novillo

15 **The Application of Social Network Analysis: Case of Smart Roofing** 273
Tugrul U. Daim, Monticha Khammuang and Edwin Garces

16 **Building a View of the Future of Antibiotics Through the Analysis of Primary Patents** 303
Cristina d'Urso de Souza Mendes and Adelaide Maria de Souza Antunes

17 **Combining Scientometrics with Patent-Metrics for CTI Service in R&D Decision-Making: Practices of National Science Library of CAS** 321
X. Liu, Y. Sun, H. Xu, P. Jia, S. Wang, L. Dong and X. Chen

18 **Tech Mining for Emerging STI Trends Through Dynamic Term Clustering and Semantic Analysis: The Case of Photonics** 341
Pavel Bakhtin and Ozcan Saritas