

Contents

1	Introduction	1
1.1	Introduction	1
1.2	Issues in Time Series Forecasting	3
1.3	Research Problems in Time Series Forecasting	4
1.4	Research Contributions and Outline of the Book	6
	References	8
2	Fuzzy Time Series Modeling Approaches: A Review	11
2.1	Soft Computing: An Introduction	11
2.1.1	Time Series Events and Uncertainty	12
2.2	Definitions	13
2.3	FTS Modeling Approach	17
2.4	Hybridize Modeling Approach for FTS	21
2.4.1	ANN: An Introduction	22
2.4.2	RS: An Introduction	25
2.4.3	EC: An Introduction	27
2.5	Financial Forecasting and Type-2 FTS Models	30
2.6	Performance Measure Parameters	31
2.7	Conclusion and Discussion	33
	References	34
3	Efficient One-Factor Fuzzy Time Series Forecasting Model	41
3.1	Background and Related Literature	42
3.2	Input Data Selection	42
3.3	MBD Approach	43
3.4	The Proposed FTS Forecasting Model	45
3.5	University Enrollments Forecasting	51
3.6	Extended Applications	55
3.7	Discussion	59
	References	61

4	High-Order Fuzzy-Neuro Time Series Forecasting Model.	65
4.1	Background and Related Literature.	65
4.2	Architecture of the ANN.	66
4.3	Input Data Selection.	67
4.4	RPD Approach	67
4.5	High-Order Fuzzy-Neuro Time Series Forecasting Model	71
4.6	Experimental Results	76
4.7	Advance Prediction of BSE.	78
4.8	Discussion.	79
	References	80
5	Two-Factors High-Order Neuro-Fuzzy Forecasting Model	83
5.1	Background and Related Literature.	83
5.2	Clustering Using Self-organizing Feature Maps ANN.	84
5.3	Hybridized Model for Two-Factors Time Series Data	85
5.4	Experimental Results	93
5.5	Discussion.	97
	References	97
6	FTS-PSO Based Model for M-Factors Time Series Forecasting . . .	99
6.1	Background and Related Literature.	99
6.2	Fuzzy Operators and Its Application.	100
6.3	Algorithm and Defuzzification for Type-2 Model.	102
6.3.1	Algorithm.	102
6.3.2	Defuzzification for Type-2 Model	103
6.4	Type-2 FTS Forecasting Model	103
6.5	Improved Hybridized Forecasting Model.	114
6.6	Empirical Analysis.	118
6.6.1	Stock Index Price Forecasting of SBI.	119
6.6.2	Stock Index Price Forecasting of Google	121
6.7	Discussion.	124
	References	125
7	Indian Summer Monsoon Rainfall Prediction	127
7.1	Background and Related Literature.	128
7.2	Description of Data Sets	129
7.3	Descriptive Statistics.	130
7.4	Description of the Neural Network Based Method	133
7.4.1	Architecture of the Proposed Model	133
7.4.2	Learning Process of Neural Networks.	135
7.5	Ensemble of Outputs	136
7.6	Simulation Results and Discussions	137
7.6.1	Empirical Analysis.	137
7.6.2	Seasonal Rainfall Prediction: Interpretation in Terms of Hydrology.	139

7.7 Discussion.	143
References	145
8 Conclusions	149
8.1 Contributions.	149
8.2 Future Work	151
References	152
Appendix A: Author's Publications	155
Index	157

<http://www.springer.com/978-3-319-26292-5>

Applications of Soft Computing in Time Series

Forecasting

Simulation and Modeling Techniques

Singh, P.

2016, XXI, 158 p. 24 illus., 14 illus. in color., Hardcover

ISBN: 978-3-319-26292-5