Table of Contents

Searching for Mutual Exclusion Algorithms Using BDDs 1
Koichi Takahashi, Masami Hagiya

Reducing Search Space in Solving Higher-Order Equations 19
Tetsuo Ida, Mircea Marin, Taro Suzuki

The Structure of Scientific Discovery: From a Philosophical Point of View . 31
Keiichi Noé

Ideal Concepts, Intuitions, and Mathematical Knowledge Acquisitions in Husserl and Hilbert 40
Mitsuhiro Okada

Theory of Judgments and Derivations 78
Masahiko Sato

Efficient Data Mining from Large Text Databases 123
Hiroki Arimura, Hiroshi Sakamoto, Setsuo Arikawa

A Computational Model for Children's Language Acquisition Using Inductive Logic Programming 140
Ikuo Kobayashi, Koichi Furukawa, Tomonobu Ozaki, Mutsumi Imai

Some Criterions for Selecting the Best Data Abstractions 156
Makoto Haraguchi, Yoshimitsu Kudoh

Discovery of Chances Underlying Real Data 168
Yukio Ohsawa

Towards the Integration of Inductive and Nonmonotonic Logic Programming 178
Chiaki Sakama

EM Learning for Symbolic-Statistical Models in Statistical Abduction 189
Taisuke Sato

Refutable/Inductive Learning from Neighbor Examples and Its Application to Decision Trees over Patterns 201
Masako Sato, Yasuhito Mukouchi, Mikiharu Terada

Constructing a Critical Casebase to Represent a Lattice-Based Relation... 214
Ken Satoh

On Dimension Reduction Mappings
for Approximate Retrieval of Multi-dimensional Data 224
Takeshi Shinohara, Hiroki Ishizaka

Rule Discovery from fMRI Brain Images by Logical Regression Analysis . . 232
Hiroshi Tsukimoto, Mitsuru Kakimoto, Chie Morita, Yoshiaki Kikuchi

A Theory of Hypothesis Finding in Clausal Logic 246
Akihiro Yamamoto, Bertram Fronhöfer

Efficient Data Mining by Active Learning 258
Hiroshi Mamitsuka, Naoki Abe

Data Compression Method Combining Properties of PPM and CTW 268
Takumi Okazaki, Kunihiko Sadakane, Hiroshi Imai

Discovery of Definition Patterns by Compressing Dictionary Sentences 284
Masatoshi Tsuchiya, Sadao Kurohashi, Satoshi Sato

On-Line Algorithm to Predict Nearly as Well as the Best Pruning
of a Decision Tree 296
Akira Maruoka, Eiji Takimoto

Finding Best Patterns Practically 307
Ayumi Shinohara, Masayuki Takeda, Setsuo Arikawa, Masahiro Hirao, Hiromasa Hoshino, Shunsuke Inenaga

Classification of Object Sequences Using Syntactical Structure 318
Atsuhiro Takasu

Top-Down Decision Tree Boosting and Its Applications 327
Eiji Takimoto, Akira Maruoka

Extraction of Primitive Motion and Discovery of Association Rules
from Human Motion Data 338
Kuniaki Uehara, Mitsuomi Shimada

Algorithmic Aspects of Boosting 349
Osamu Watanabe

Automatic Detection of Geomagnetic Jerks by Applying a Statistical Time
Series Model to Geomagnetic Monthly Means 360
Hiromichi Nagao, Tomoyuki Higuchi, Toshihiko Iyemori, Tohru Araki

Application of Multivariate Maxwellian Mixture Model
to Plasma Velocity Distribution 372
Genta Ueno, Nagatomo Nakamura, Tomoyuki Higuchi, Takashi Tsuchiya, Shinobu Machida, Tohru Araki

Inductive Thermodynamics from Time Series Data Analysis 384
Hiroshi H. Hasegawa, Takashi Washio, Yukari Ishimiya

Mining of Topographic Feature from Heterogeneous Imagery
and Its Application to Lunar Craters 395
Rie Honda, Yuichi Iijima, Osamu Konishi

Application of Neural Network Technique
to Combustion Spray Dynamics Analysis 408
Yuji Ikeda, Dariusz Mazurkiewicz

Computational Analysis of Plasma Waves and Particles
in the Auroral Region Observed by Scientific Satellite 426
Yoshiya Kasahara, Ryotaro Niitsu, Toru Sato

A Flexible Modeling of Global Plasma Profile Deduced from Wave Data . . 438
Yoshitaka Goto, Yoshiya Kasahara, Toru Sato

Extraction of Signal from High Dimensional Time Series:
Analysis of Ocean Bottom Seismograph Data 449
Genshiro Kitagawa, Tetsuo Takanami, Asako Kuwano, Yoshio Murai, Hideki Shimamura

Foundations of Designing Computational Knowledge Discovery Processes . 459
Yoshinori Tamada, Hideo Bannai, Osamu Maruyama, Satoru Miyano

Computing Optimal Hypotheses Efficiently for Boosting 471
Shinichi Morishita

Discovering Polynomials to Fit Multivariate Data
Having Numeric and Nominal Variables 482
Ryohei Nakano, Kazumi Saito

Finding of Signal and Image
by Integer-Type Haar Lifting Wavelet Transform 494
Koichi Niijima, Shigeru Takano

In Pursuit of Interesting Patterns
with Undirected Discovery of Exception Rules 504
Einoshin Suzuki

Mining from Literary Texts:
Pattern Discovery and Similarity Computation 518
Masayuki Takeda, Tomoko Fukuda, Ichirō Nanri

Second Difference Method Reinforced by Grouping:
A New Tool for Assistance in Assignment of Complex Molecular Spectra . . 532
Takehiko Tanaka

Discovery of Positive and Negative Knowledge in Medical Databases Using Rough Sets 543
Shusaku Tsumoto

Toward the Discovery of First Principle Based Scientific Law Equations . . . 553
Takashi Washio, Hiroshi Motoda

A Machine Learning Algorithm for Analyzing String Patterns Helps to Discover Simple and Interpretable Business Rules from Purchase History . . 565
Yukinobu Hamuro, Hideki Kawata, Naoki Katoh, Katsutoshi Yada

Constructing Inductive Applications by Meta-Learning with Method Repositories 576
Hidenao Abe, Takahira Yamaguchi

Knowledge Discovery from Semistructured Texts 586
Hiroshi Sakamoto, Hiroki Arimura, Setsuo Arikawa

Packet Analysis in Congested Networks 600
Masaki Fukushima, Shigeki Goto

Visualization and Analysis of Web Graphs 616
Sachio Hirokawa, Daisuke Ikeda

Knowledge Discovery in Auto-tuning Parallel Numerical Library 628
Hisayasu Kuroda, Takahiro Katagiri, Yasumasa Kanada

Extended Association Algorithm Based on ROC Analysis for Visual Information Navigator 640
Hiroyuki Kawano, Minoru Kawahara

WWW Visualization Tools for Discovering Interesting Web Pages 650
Hironori Hiraishi, Fumio Mizoguchi

Scalable and Comprehensible Visualization for Discovery of Knowledge from the Internet 661
Etsuya Shibayama, Masashi Toyoda, Jun Yabe, Shin Takahashi

Meme Media for Re-editing and Redistributing Intellectual Assets and Their Application to Interactive Virtual Information Materialization . . 672
Yuzuru Tanaka

Author Index 683