

2012 IEEE International Conference on Granular Computing

(GrC 2012)

**Hangzhou, China
11 – 13 August 2012**



**IEEE Catalog Number: CFP12GRC-PRT
ISBN: 978-1-4673-2310-9**

2012 IEEE International Conference on Granular Computing *GrC 2012* Table of Contents

Preface	xiii
Conference Organization	xv
Program Committee Members	xviii

Keynote Speakers and Invited Papers

Feature selection for large-scale data sets in GrC.....	2
<i>Jiye Liang</i>	
Uncertainty and Knowledge Theories: New Era in Granular Computing.....	8
<i>T.Y. Lin</i>	
Inductive and Non-inductive Methods of Clustering.....	12
<i>Sadaaki Miyamoto</i>	
Exploring Research Issues over Large Graphs.....	18
<i>Jeffrey Xu Yu</i>	
Exploitation of Label Relationship in Multi-Label Learning.....	19
<i>Zhi-Hua Zhou</i>	

Regular Papers

Non-Ignorance and Knowledge.....	21
<i>Seiki Akama, Tetsuya Murai, and Yasuo Kudo</i>	
A Novel Tolerant Skyline Operator for Decision Support.....	26
<i>Junyi Chai, James N.K. Liu, Dehong Gao, and Jian Xu</i>	
MOGA for Multi-Level Fuzzy Data Mining.....	32
<i>Chun-Hao Chen, Chi-Hsuan Ho, Tzung-Pei Hong, and Wei-Tee Lin</i>	
DDoS Defense System with Turing Test and Neural Network.....	38
<i>Jiehao Chen, Ming Zhong, Fengjiao Chen, and Andi Zhang</i>	

Prediction-Based Outlier Detection with Explanations.....	44
<i>Liang-Chieh Chen, Tsung-Ting Kuo, Wei-Chi Lai, Shou-De Lin, and Chi-Hung Tsai</i>	
Frequent Pattern Mining for Price Fluctuation Based on Cloud Computing.....	50
<i>Ming Chen, I-Jen Chiang, and Chao-Wei Lai</i>	
The Feature of Resonance of Gene Expression and Identification of the Genes Associated with Alzheimer’s Disease	55
<i>Rong Chen, Ben-Qiong Hu, Dan-Xia Zhang, Qin Zhang, and Chao-Yang Pang</i>	
Parameter Estimation of Conditional Random Fields Model Based on Cloud Computing.....	59
<i>Wenguang Chen, Yangyang Li, Haoyi Wang, and I-Jen Chiang</i>	
Knowledge Approximations and Representations in Binary Granular Computing.....	63
<i>Zehua Chen, T.Y. Lin, and Gang Xie</i>	
A Nearest Neighbor Method for Predicting Solenoid Proteins.....	68
<i>Wen Cheng, Malinda Sanjaka, and changhui Yan</i>	
Face Image Recognition based on Time Series Motif Discovery	72
<i>Lianhua Chi, Yucai Feng, Hehua Chi, and Ying Huang</i>	
Experiments on Rule Induction from Incomplete Data Using Three Probabilistic Approximations	78
<i>Patrick Clark and Jerzy Grzymala-Busse</i>	
Parallel Reducts for Incremental Data.....	84
<i>Dayong Deng, Lin Chen, Dianxun Yan, and Houkuan Huang</i>	
A Modified Attribute Reduction Algorithm of Consistent Covering Decision Information Systems.....	89
<i>Jiwei Deng, Tian Yang, and Taihong Wang</i>	
The Optimal Division of Model based on Rough Logic.....	93
<i>Shaobo Deng</i>	
An improved Rough K-means Algorithm with Weighted Distance Measure.....	97
<i>Wenyong Duan, Taorong Qiu, Longzhen Duan, Qing Liu, and Haiquan Huang</i>	
Application of Attribute Theory for Container Throughput Forecast.....	102
<i>Xueyan Duan, Siqin Yu, and Guangli Xu</i>	

Determination of ICESat Sea Surface Height and Comparing with TP Data.....	108
<i>Chunbo Fan, Peng Zhang, Yanna Sun, Chuanlu Liu, and Xiaochun Shi</i>	
Natural Disaster Information Statistics Study Based on Stratified Random Sampling Survey.....	113
<i>Chunbo Fan, Peng Zhang, Yanna Sun, Chuanlu Liu, and Xiaochun Shi</i>	
Evaluation on Enterprise's Core Competence Based on The Method of Arrttribute Theory.....	117
<i>Zhao-qi Fang and Xueyan Duan</i>	
Qualitative Mapping Defined Wavelet Transformation.....	123
<i>Jiali Feng</i>	
QoM: An Effective Querying Method for Time Series Database	129
<i>Yucai Feng, Lianhua Chi, Hehua Chi, Chuanlu Liu, and Zhuo Liu</i>	
Supervaluationism and Rough Set Theory.....	135
<i>Hao Cheng Fu</i>	
Research on Grain Information Classification based on SVM Decision Tree.....	138
<i>Ruihuan Geng, Dexian Zhang, and Jiajia Chai</i>	
An Overview of Newly Open-Source Cloud Storage Platforms.....	142
<i>Genqiang Gu, Qingchun Li, Xiaolong Wen, Yun Gao, and Xuejie Zhang</i>	
Mining Associative Decision Rules in Decision Tables through Attribute Value Reduction.....	148
<i>Jianchao Han</i>	
Pseudo-relevance Feedback Query Based on Wikipedia.....	154
<i>Tingting He and Xionglu Dai</i>	
Strong-III N_β -compactness in L-topological Spaces.....	160
<i>Xiaodan He and Shizong Bai</i>	
Application of Neural Network to Brain-Computer Interface.....	163
<i>Wei-Yen Hsu and I-Jen Chiang</i>	
Ant Colony Optimization Vs Genetic Algorithm to Calculate Gene Order of Gene Expression Level of Alzheimer's Disease.....	169
<i>Ben-Qiong Hu, rong chen, Dan-Xia Zhang, Gang Jiang, and Chao-Yang Pang</i>	
Group Decision Making Based on Vague Preference Relations.....	173
<i>Jianlong Hu, Deyu Li, Yanhui Zhai, and Hua Li</i>	

A Multi-domain Adaptation for Sentiment Classification Algorithm Based on Class Distribution...	179
<i>Kongbing Hu, Yuhong Zhang, and Xuegang Hu</i>	
On Matrix Representation of Three Types of Covering-based Rough Sets.....	185
<i>Aiping Huang</i>	
Predicting Disease by Using Data Mining Based on Healthcare Information System.....	191
<i>Feixiang Huang, Shengyong Wang, and Chien-Chung Chan</i>	
Matroidal Structure of Covering Rough Sets based on Multi-granulation.....	195
<i>Jing Huang and William Zhu</i>	
Projective lag synchronization of neural networks with time delay.....	201
<i>Junjian Huang, Tingwen Huang, and Chuandong Li</i>	
Attribute Reduction for Imprecise Decision Tables.....	205
<i>Masahiro Inuiguchi and Bingjun Li</i>	
Hierarchical Structures Based on Intuitionistic Fuzzy Tolerance Relations.....	211
<i>Xiufang Jia, Liangtu Song, Rujing Wang, and Wei Li</i>	
An Updated Algorithm for Fast Computing Positive Region.....	216
<i>Ye Jun and Tian Xiu Mei</i>	
Indiscernibility Relations by Interrelationships between Attributes in Rough Set Data Analysis.....	220
<i>Yasuo Kudo and Tetsuya Murai</i>	
An Improved Approach for Sequential Utility Pattern Mining.....	226
<i>Guo-Cheng Lan, Tzung-Pei Hong, Vincent S. Tseng, and Shyue-Liang Wang</i>	
MathJax's Realization via Computing Node and Server Configuration.....	231
<i>Hang Li and Cuihua Hu</i>	
Covering-based approximation operators by boolean matrix.....	236
<i>Qingyin Li</i>	
Granule Structures in Formal Contexts from Covering Rough Set Aspect.....	242
<i>Tongjun Li</i>	
Tackle Three Practical Classification Problems via Ensemble Learning.....	248
<i>Xuzhou Li and Piji Li</i>	

Remarks on A Novel Statistical Histogram 欵?Average Scene Cumulative Histograms.....	253
<i>Jinping Li</i>	
Assembly Method for Multimodal Image Registration.....	258
<i>Jinping Li</i>	
A Profile-based Framework for Interaction Prediction.....	265
<i>Zhung-Xun Liao, Wen-Chih Peng, and Philip S. Yu</i>	
A Cloud-based Prediction System for Health Exams.....	N/A
<i>Chin-Ho Lin, Liang-Cheng Huang, I-Jen Chiang, and Seng-Cho T. Chou</i>	
An Empirical Study of Applying Data Mining Techniques to the Prediction of TAIEX Futures.....	277
<i>Hong-Che Lin and Kuo-Wei Hsu</i>	
Mining Important Association Rules on Different Customer Potential Value Segments for Life Insurance Database.....	283
<i>Jian-Bang Lin, Te-Hsin Liang, and Yong-Goo Lee</i>	
Applying Region-Aware Cyclic Patterns to Object Recovering Energy-Efficiently in Sensor Networks.....	289
<i>Kawuu W. Lin</i>	
Classifying Twitter Data with Naive Bayes Classifier.....	294
<i>T.Y. Lin, Hrishikesh Paranjape, Nishant Patel, Chris Tseng, and Soon Tee Teoh</i>	
Dual Locality Preserving Nonnegative Matrix Factorization for Image Analysis.....	300
<i>Furui Liu</i>	
An improved genetic algorithm to minimal test cost reduction.....	304
<i>Jiabin Liu</i>	
Attribute Reduction with Homomorphism in Incomplete Information Systems.....	310
<i>Xiaojuan Liu and Jusheng Mi</i>	
Characteristic of partition-circuit matroid through approximation number.....	314
<i>Yanfang Liu</i>	
Pattern Matching with Wildcards based on Multiple Suffix Trees.....	320
<i>Yingling Liu, xindong wu, Xuegang Hu, jun gao, and chi wang</i>	
A Data-Driven Model for Software Reliability Prediction.....	326
<i>Jung-Hua Lo</i>	

Dynamic Maintenance Strategy for Updating Approximations in Set-Valued Ordered Information Systems under the Attribute Generalization.....	332
<i>Chuan Luo, Tianrui Li, Hongmei Chen, and Dun Liu</i>	
Concept-based Document Models using Explicit Semantic Analysis.....	338
<i>Jing Luo, Bo Meng, Xinhui Tu, and Maofu Liu</i>	
Research on Three-dimensional Reconstruction of the Liver CT Images.....	343
<i>Rui Ma, Pengpeng Liu, Hui Chang, Yan Zhang, and Qingxia Li</i>	
Extracting Hierarchical Concept with Cloud Transform.....	347
<i>Hui Meng, Shuliang WANG, and Liping XIAO</i>	
Granular association rules with four subtypes.....	353
<i>Fan min</i>	
Hierarchical Clustering Using Transitive Closure and Semi-supervised Classification Based on Fuzzy Rough Approximation.....	359
<i>Sadaaki Miyamoto and Satoshi Takumi</i>	
A Fast Algorithm for Classification Based on Association Rules.....	365
<i>Loan T. T. Nguyen, Bay Vo, Tzung-Pei Hong, and Hoang Chi Thanh</i>	
Formal Specification and Automated Verification of UML2.0 Sequence Diagrams.....	370
<i>Tu Peng and Gangyi Ding</i>	
Multiclass SVM with Ramp Loss for Imbalanced Data Classification.....	376
<i>Piyaphol Phoungphol, Yanqing Zhang, Yichuan Zhao, and Bismita Srichandan</i>	
Learning Taxonomical Relations from Domain Texts Using WordNet and Word Sense Disambiguation.....	382
<i>Janardhana Punuru and Jianhua Chen</i>	
Job scheduling algorithm based on fuzzy quotient space theory in cloud environment.....	388
<i>Ping Qi</i>	
Online Pattern Matching with Wildcards.....	394
<i>Jipeng Qiang, Weidong Tian, Dan Guo, and Xindong Wu</i>	
Rough Fuzzy Subspaces Based on Subspaces in the Vector Space.....	400
<i>Mingfen Wu and Tao Chen</i>	

Formalizing Data Mining with Association Rules.....	406
<i>Jan Rauch</i>	
Division Charts and their Merging Algorithm in Rough Non-deterministic Information Analysis...	412
<i>Hiroshi Sakai, Mao Wu, Naoto Yamaguchi, and Michinori Nakata</i>	
Quantum-Negative Selection Algorithm for Associative Classification.....	418
<i>Omar S. Soliman and Amr Adly</i>	
A Novel Attribute Reduction Algorithm Using Condensing Tree.....	424
<i>Naiping Song</i>	
Vertical Mining for High Utility Itemsets.....	429
<i>Wei Song, Yu Liu, and Jinhong Li</i>	
Several methods to build Multiresolution Indistinguishability Systems.....	435
<i>Adolfo R. de Soto and Jordi Recasens</i>	
Efficient Pattern-Based Conceptual Image Retrieval.....	441
<i>Ja-Hwung Su, Chun-Yi Kuo, and Vincent S. Tseng</i>	
Attribute reduction algorithms based on the matroidal structure of rough set.....	447
<i>Feng Sun</i>	
Generalized Rough Sets Based on Reflexive Relations.....	453
<i>Yu-Ru Syau, Jinyan Fan, and Tsau Young Lin</i>	
Top-down vs Bottom-up methods of Linkage for Asymmetric Agglomerative Hierarchical Clustering.....	459
<i>Satoshi Takumi and Sadaaki Miyamoto</i>	
Characterization of attribute reduction of decision system.....	465
<i>Jianguo Tang</i>	
First-order Axiomatization of Rough Mereology.....	471
<i>Hsing-chien Tsai</i>	
A Decision Generation Algorithm Based on Granular Computing.....	475
<i>Min-Yi Tsai, Ping-Fang Chiang, Shao-Jui Chen, and Wei-Jen Wang</i>	
Degree of Freedom and Numbers of Subdeterminants in Contingency Table.....	481
<i>Shusaku Tsumoto and Shoji Hirano</i>	

Geometrical Interpretation of Pearson Residuals.....	487
<i>Shusaku Tsumoto and Shoji Hirano</i>	
Modeling Repetitive Patterns: A Bridge Between Pattern Theory and Data Mining.....	493
<i>Ricardo Vilalta and Luis Real</i>	
A New Rumor Propagation Model on SNS Structure.....	499
<i>Hui Wang, Lin Deng, Fei Xie, Hui Xu, and Jianghong Han</i>	
The research on computing dynamic reduct.....	504
<i>wang jiayang, deng lvxiang, and zhang chen</i>	
Incomplete Multigranulation Decision Rules Acquisition.....	510
<i>Lijuan Wang</i>	
Incomplete Data Mining Based on Fuzzy Tolerance quotient space.....	515
<i>Wang Lunwen and Zhang Ling</i>	
Representation and Deduction of Provenance Knowledge for XML Queries.....	519
<i>Yongli Wang, Lijuan Miao, and Xiaohua Hu</i>	
Attribute Oriented Induction of High-level Emerging Patterns.....	525
<i>Harco Leslie Hendric Spits Warnars</i>	
Attribute Characteristics of Object Oriented Concept Lattices Based on the Join-irreducible Elements.....	531
<i>Ling Wei and Aibao Pan</i>	
Variable Precision Multi-granulation Rough Set.....	536
<i>Wei Wei, Jiye Liang, Yuhua Qian, and Feng Wang</i>	
Discovering Community Membership in Biological Networks with Node Topology Potential.....	541
<i>Liping Xiao, Shuliang WANG, and Jingjing Li</i>	
Granular and Rough Computing on Covering.....	547
<i>Jun Xie, T.Y. Lin, and William Zhu</i>	
A Random Walk Model Based Approach for Quantifying Technology Emergence and Impact for Research Articles.....	553
<i>Ying Xie and Vijay Raghavan</i>	
Research on Multi-agent Comprehensive Evaluation Model Based on Attribute Coordinate.....	556
<i>guanglin xu, Song Min, and Jiali Feng</i>	

Optimistic multi-granulation fuzzy rough set model in ordered information system.....	563
<i>Weihua Xu</i>	
A Recommendation Ranking Model Based on Credit.....	569
<i>xiaolin xu</i>	
Neighborhood System of Parameterized Binary Relations.....	573
<i>Xinying Xu and T.Y. Lin</i>	
The Effectiveness Of Redundant Information In Text Classification.....	579
<i>YAN XU</i>	
Ant colony optimization to minimal test cost reduction.....	585
<i>Zilong Xu</i>	
Uncertainty Measures of Covering Rough Sets Based on Knowledge Granularities.....	591
<i>Chengzhuan Yang, Jiyi Wang, and Jiandang Wu</i>	
A New Method of Attribute Reduction of Covering Rough Sets.....	596
<i>Tian Yang, Qingguo Li, and Bilei Zhou</i>	
On the Topological Structure of Granular Reducts with Covering Rough Sets.....	601
<i>Tian Yang, Qingguo Li, and Bilei Zhou</i>	
Rules mining in hierarchical rough sets.....	605
<i>Wei Yang, Duoqian Miao, and Qinrong Feng</i>	
Learning Analysis for Correlation of Fuzzy Rules in Applying RLS for Neural Fuzzy Systems.....	609
<i>Jen-Wei Yeh and Shun-Feng Su</i>	
Mining Web Navigation Patterns with Dynamic Thresholds for Navigation Prediction.....	614
<i>Jia-Ching Ying, Chu-Yu Chin, and Vincent S. Tseng</i>	
Trend Analysis for Stock Margin of Safety on Attribute Theory.....	620
<i>Luo Yue, Fengjiali Jiali, and Liu Yongchang,</i>	
An Incremental Approach for Updating Approximations of Neighborhood Rough Fuzzy Sets under the Variation of Object Set.....	624
<i>Anping Zeng and Tianrui Li</i>	
Rough Set Model Based on Dual-limited Symmetric Similarity Relation.....	629
<i>Yuming Zhai</i>	

LQR Optimal Control of Triple Inverted Pendulum Based on Fuzzy quotient space theory.....	633
<i>Chijian Zhang</i>	
A Re-ranking Method Based on Concept Hierarchy Using Cloud Model.....	639
<i>Maoyuan Zhang, Zhenxia Lou, Qiang Liu, and Xiaoyi Li</i>	
A Novel Model to Restrain Email Virus Propagation.....	645
<i>Yanping Zhang, Tingting Sun, and Shu Zhao</i>	
Contracting Community for Computing Maximum Flow.....	651
<i>Zhang Yanping, Xu Xiansheng, Hua Bo, and Zhao Shu</i>	
Blood Oxygen Monitoring Cloud Platform based on the Attribute Theory.....	657
<i>Hui Zheng</i>	
Study on characteristic consistent blocks based rough set approach to incomplete system.....	663
<i>Zhou Junyi and yang xibei</i>	
Granular Logic and Its Formal Representation Based on Variable Fuzzy Criterion.....	667
<i>Ru Qi Zhou and Chun He LU</i>	
A new Classification algorithm Based on Ensemble PSO_SVM and Clustering analysis.....	673
<i>Zhou Tao</i>	
Detecting community structure in weighted social networks based on shared neighbors.....	678
<i>Kai Zhu</i>	
Digital resources serving performance assessing based on fuzzy neural networks.....	682
<i>Shiwei Zhu, Yanqing Zhao, Junfeng Yu, Lei Wang, Moji Wei, and Ai-ping Wang</i>	
Mis-classified Instance Learning and Recovery in Classification.....	688
<i>Yun Zhu, Yanqing Zhang, and Yi Pan</i>	

Short Papers

Pre-closedness in L-topological spaces.....	695
<i>Bai Shizhong and Chen Xixi</i>	
Improvement of Mutual Information based on TF-CA-CI Algorithm.....	699
<i>Jiajia Chai, Dexian Zhang, and Ruihuan Geng</i>	
Attributive Indiscernibility and the notion of BM-Spaces.....	703

Kankana Chakrabarty

Application of EAGLE Algorithm for Modules Identification in Biological Networks.....	707
<i>Dewu Ding and Long Ying</i>	
Integrating E-Learning System Based on Cloud Computing.....	710
<i>Zheng He</i>	
Nested Granular Local Learning.....	714
<i>Hong Hu and zhongzhi shi</i>	
Research on the Course Relations based on Granular Computing.....	719
<i>Yimei Huang and Jinping Li</i>	
Binary Granular Computing About Course Relations.....	723
<i>Yimei Huang and Jinping Li</i>	
Evidence Approximation Algorithm Based on Focal Element Similarity.....	727
<i>Xie Jun and Wu Genxiu</i>	
A new parameter reduction in fuzzy soft sets.....	730
<i>Zhi Kong, Lifu Wang, Zhaoxia Wu, and Dexuan Zou</i>	
On Nonstandard Reals and Granular Mathematics.....	733
<i>Jui-Lin Lee</i>	
Study on Characteristics and Structure of TCMLS Knowledge Source.....	N/A
<i>Guangrong Li and Weikang Li</i>	
A Rapid 3D protein Structural Classification using Pseudo 2D HMMs.....	742
<i>Hui Li and Chunmei Liu</i>	
HALFTONE VISUAL CRYPTOGRAPHY WITH COLOR SHARES.....	746
<i>Yuanfeng Liu and zhongmin wang</i>	
An Accuracy Measure for Rough Sets Based On Knowledge of Particles.....	750
<i>Binghui Luo and Genxiu Wu</i>	
A Comparison of some approximation definitions about neighborhood system based rough sets....	753
<i>Jun Meng</i>	
Decision Support Model to Disaggregate Upper Egypt Regional Total Fertility Rates to Governorates Level Using Fuzzy Analytical Hierarchy Process.....	757

Omar S. Soliman and Manal El-Fiki

Real-time Adaptive Classification System for Intelligent Sensing in Manufacturing Environment (A Feasibility Study).....761

Kar Leong Tew, Nguyen Minh Nhut, Sintiani Dewi Teddy, and Xiaoli Li

Visualization of Doctors' Behavior using Similarity-based Methods.....767

Shusaku Tsumoto and Shoji Hirano

Characteristics of 2-circuit matroids through rough sets.....771

shiping wang, william zhu, and fan min

Multi-mode Screensaver for Embedded System Based on uC/OS-II.....775

Jia Yin Xue, Ming Jiang Wang, and Lei Chen

Rough set over dual-universes in general incomplete information system.....779

Ruixia Yan and Zhong Wu

Improved Algorithm and Further Research of beta-reduct for Variable Precision Rough Set.....783

Yanyan Yang

Topology Structure and Centrality in A Java Source Code.....787

Long Ying and Dewu Ding

Additional Papers

A New K-means Algorithm for Community Structures Detection Based on Fuzzy Clustering.....791

Qun Liu, Zhiming Peng, Yi Gao, Qian, Liu

Mechanism of Concept Learning in Topologized Knowledge Granular Space Based on GrC.....796

Zuqiang Meng, Zhongzhi Shi, Shimo Shen

Variable Optimization in Code Migration from GPU to Multi-core.....802

Feng Yue, Jianmin Pang, Zheng Shan, Xiaonan Liu

Approximate Reduction in Inconsistent Formal Decision Contexts.....806

Xia Wang, Wei-Zhi Wu

On Reconfigurable Association Rule Mining.....812

Wen-Tsai Liao, Ming-Syan Chen

Inferring Social Relationships Across Social Networks for Viral Marketing.....816

Tsung-Hao Hsu, Meng-Fen Chiang, Wen-Chih Peng

On Objective-Based Rough c-Means Clustering.....822

Yasunori Endo, Naohiko Kinoshita

Author Index