2013 Joint Rough Set Symposium

Halifax, Nova Scotia, October 10-13, 2013

Conference Program

:October 11 and 13

:October 10

:October 12

Industry sponsor

INFOBRIGHT

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

October 10, 2013. 09:30 am - 02:00 pm Dalhousie University Club

02:00 pm - 05:15 pm Dalhousie University Student Union Building (Rooms 303 and 307)

9:30 am 10: 00 am	Registration	
10:00 am – 10:25 am	Welcome speech: Stan Matwin	
10:25 am - 10:50 am	Keynote speech: Andrzej Skowron Title: Interactive Granular Computing	
10:50 am - 11:00 am	Coffee break	
11:00 am – 12:00 pm	Keynote speech: Graham Toppin Title: Toward Granular Scalability of Analytical Data Processing	
12:00 pm – 01:00 pm	Keynote speech: Sergei Kuznetsov Title: Pattern structures for analyzing relational and imprecise data	
01:00 pm – 02:00 pm	Lunch	
02:00 pm – 03:00 pm	Contributed talks: RST1 2 papers: 2, 3	Tutorial1 : Marcin Szczuka Using Domain Knowledge in Initial Stages of Knowledge Discovery in Databases
03:00 pm – 03:45 pm	Coffee break	
03:15 pm - 04:15 pm	Contributed talks: RST2 2 papers: 5, 1	Tutorial2: Gwo-Hshiung Tzeng New Concepts and Trends of MCDM for Tomorrow: Solving Actual Problems
04:15 pm - 05:15 pm	Contributed talks: RST2 2 papers: 4, 6	

RST 1: (October 10, 2:00-3:00pm)

- 2 – JingTao Yao - Game-theoretic Rough Sets and Multi-criteria Decision Making
- 3 - Tamás Mihálydeák -First-order Logic Based on Set Approximation: a Partial Three-valued Approach

RST 2: (October 10, 3:15-4:15pm)

- 5 - Yiyu Yao - Notes on Semantics of Rough Set Theory
- 1 - Davide Ciucci, Didier Dubois, Henri Prade - Rough Sets, Formal Concept Analysis, and their Structures of Opposition

RST 3: (October 10, 4:15-5:15pm)

- 4 - Mei-Zheng Li, Guoyin Wang and Jin Wang - A Formal Concept Analysis Based Approach to Minimal Value Reduction
- 6 - Marcin Wolski - Data, Information and Knowledge: Fundamentals of Formal Concepts and (Dominance-Based) Rough Sets

2013 Joint Rough Set Symposium

INFOBRIGHT | SAINT MARY'S UNIVERSITY SINCE 1802 | DALHOUSIE UNIVERSITY | ACADIA UNIVERSITY

Conference Program

October 11, 2013. Saint Mary's University

9:00 am - 9:45 am	Registration at McNally auditorium foyer		
9:45 am - 10:00 am	David Gauthier, Kevin Vessey, Steven Smith, Saint Mary's University McNally auditorium		
10:00 am – 11:00 am	Keynote speech: Eugene Santos, Jr. McNally auditorium Title: Aggregation and De-aggregation: Explanation, End-to-End Analyses, and Emergence		
11:00 am – 12:30 pm	Contributed talks: JRS1 (s5) 4 papers Room No. L-178 42, 53, 71, 54	Contributed talks: JRS2 (s9) 3 papers Room No. L-179 51, 66, 60	Contributed talks: JRS12 (s1/2) 3 papers Room No. L-181 91, 98, 48
12:30 pm – 01:30 pm	Lunch – provided. McNally auditorium		
01:30 pm – 02:30 pm	Keynote speech: Boris Mirkin. McNally auditorium		
02:30 pm – 4:00 pm	Contributed talks: JRS3 (s3) 5 papers Room No. L-178 26, 32, 47, 95, 100	Contributed talks: JRS4 (s4) 5 papers Room No. L-179 19, 21, 45, 20, 83	Contributed talks: JRS5(s6) 5 papers Room No. L-181 10, 84, 90, 104, 114
04:00 pm – 04:15 pm	Coffee break		
04:15 pm – 5:45 pm	Contributed talks: JRS6 (s7/1) 5 papers Room No. L-178 6, 15, 35, 56, 24	Contributed talks: JRS7 (s10/2) 4 papers Room No. L-179 3, 44, 67, 49	Contributed talks: JRS8 (s11/1) 5 papers Room No. L-181 61, 14, 27, 55, 59
6:30 pm – 09:30 pm	Reception: Historical Alexander Keith Brewery (Data Mining Competition Awards)		

S5: Covering-Based Rough Set and Its Application (Room No. L-178) (October 11, 11:00 am – 12:30 pm)

- 42 - Jingqian Wang and William Zhu - Contraction to matroidal structure of rough sets
- 53 - Yanfang Liu and William Zhu - Comparative study between extension of covering approximation space and its induction through transversal matroid
- 71 - Lijuan Wang, Xibei Yang and Chen Wu - Multi-covering based rough set mode
- 54 - Aiping Huang and William Zhu - Topological characterizations for three covering approximation operators

S9: Foundations (Room No. L-179**)** (October 11, 11:00 am – 12:30 pm)

- 51 - Ryszard Janicki and Adam Lenarcic - Optimal Approximations with Rough Sets
- 66 - Tamás Mihálydeák and Zoltán Ernő Csajbók - Partial Approximation of Multisets and its Applications in Membrane Computing
- 60 - Zbigniew Suraj - Matrix Representation of Parameterised Fuzzy Petri Nets

2013 Joint Rough Set Symposium

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Conference Program

S1/2: Fuzzy and rough hybridization and applications (Room No. L-181) (October 11, 11:00 am – 12:30 am)

- 91 - Lynn D'Eer, Nele Verbiest, Chris Cornelis and Lluis Godo - Implicator-Conjunctor Based Models of Fuzzy Rough Sets: Definitions and Properties
- 98 - Nele Verbiest, Chris Cornelis and Francisco Herrera - OWA-FRPS: A Prototype Selection method based on Ordered Weighted Average Fuzzy Rough Set Theory
- 48 - Chhaya Gangwal, Rabi Nanda Bhaumik and Shishir Kumar - Application of IF Rough Relational Model to deal with Diabetic Patients

S3: Soft Clustering (Room No. L-178) (October 11, 2:30 pm – 4:00 pm)

- 26 - Asma Ammar, Zied Elouedi and Pawan Lingras - Incremental Possibilistic K-Modes
- 95 - Andrzej Janusz, Adam Krasuski and Marcin Szczuka - Improving Semantic Clustering of EWID Reports by Using Heterogeneous Data Types
- 100 - Manish Joshi and Monica Mundada - Soft Clustering to Determine Ambiguous Regions during Medical Images Segmentation
- 32 - Laszlo Aszalos and Tamas Mihalydeak - Rough Clustering Generated by Correlation Clustering
- 47 - Georg Peters and Crespo Fernando - An Illustrative Comparison of Rough k-Means to Classical Clustering Approaches

S4: Granular Computing Theory Research and Application (Room No. L-179) (October 11, 2:30 pm – 4:00 pm)

- 19 - Danqing Xu, Yanan Fu and Junjun Mao - Dynamic Analysis of IVFSs Based on Granularity Computing
- 21 - Yanan Fu, Danqing Xu and Junjun Mao - A Novel MGDM Method Based on Information Granularity under Linguistic Setting -
- 45 - Ling Zhang, Yuanting Yan, Shu Zhao and Yanping Zhang - Network Performance Analysis Based on Quotient Space Theory
- 20 - Han-Bing Yan and Xu-Qing Tang - The impact on multiple tree species competition distribution under the medium-term climate change in Northeast China
- 83 - Marcin Wolski and Anna Gomolińska, Rough Set Granularity: Scott Systems' Approach

S6: Image and Medical Data Analysis (Room No. L-181) (October 11, 2:30 pm – 4:00 pm)

- 10 - Rory Lewis, Chad Mello, James Ellenberger and Andrew M White - Domain Adaptation for Pathologic Oscillations
- 84 - Daryl Hepting and Emad Almestadi - Discernibility in the Analysis of Binary Card Sort Data
- 90 - Ti Wang, Mohammed Shameer Igbal and Daniel Silver - An Unsupervised Deep-Learning Architecture that Can Reconstruct Paired Images
- 104 - Ryu-Hyeok Gwon, Kyoung-Yeon Kim, Jin-Tak Park, Hakill Kim and Yoo-Sung Kim - A Kidnapping Detection Scheme Using Frame-based Classification for Intelligent Video Surveillance
- 114 - Małgorzata Przybyła-Kasperek and Alicja Wakulicz-Deja - Global decisions taking on the basis of dispersed medical data

2013 Joint Rough Set Symposium

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Conference Program

S7/1: Inconsistency, Incompleteness, non-determinism (Room No. L-178) (October 11, 4:00 pm – 5:45 pm)

- 6 - Mohammad Azad, Igor Chikalov and Mikhail Moshkov - Three Approaches to Deal with Inconsistent Decision Tables - Comparison of Decision Tree Complexity
- 15 - Hiroshi Sakai, Mao Wu, Naoto Yamaguchi and Michinori Nakata - Rough Sets-Based Information Dilution by Non-deterministic Information
- 35 - Na Jiao - The Completion Algorithm in Multiple Decision Tables Based on Rough Sets
- 56 - Patrick G. Clark and Jerzy W. Grzymala-Busse - An Experimental Comparison of Three Interpretations of Missing Attribute Values Using Probabilistic Approximations
- 24 - Fawaz Alsolami, Igor Chikalov and Mikhail Moshkov - Sequential Optimization of Approximate Inhibitory Rules Relative to the Length, Coverage and Number of Misclassifications

S10/2: Rules, Reducts, Ensembles (Room No. L-179) (October 11, 4:00 pm – 5:45 pm)

- 3 - Yuichi Kato, Tetsuro Saeki and Shoutarou Mizuno - Studies on the Necessary Data Size for Rule Induction by STRIM
- 44 - Jin Wang, Bo Yun, Ping-Li Huang and Yu-Ao Liu - Applying Threshold SMOTE algorithm with Attribute Bagging to Imbalanced Datasets
- 67 - Motoyuki Ohki and Masahiro Inuiguchi - Robustness Measure of Decision Rules
- 49 - Salsabil Trabelsi, Zied Elouedi and Pawan Lingras - Belief discernibility matrix and function for partially uncertain and incremental or large data

S11/1: Learning, Predicting, Modeling (Room No. L-181) (October 11, 4:00 pm – 5:45 pm)

- 61 - Matt Triff, Pawan Lingras - Recursive profiles of business and reviewers on yelp.com
- 14 - Xuan Zou, Guoyin Wang, Guanglei Gou and Hong Li - A divide-and-conquer method based ensemble regression model for water quality prediction
- 27 - Hongming Zuo and Julia Johnson A Self-Learning Audio Player that uses a Rough Set and Neural Net Hybrid Approach
- 55 - Weijia Su, Djemel Ziou and Nizar Bouguila - A Hierarchical Statistical Framework for the Extraction of Semantically Related Words in Textual Documents
- 59 - Wentao Fan, Nizar Bouguila and Hassen Sallay - Anomaly Intrusion Detection Using Incremental Learning of an Infinite Mixture Model with Feature Selection

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

October 12, 2013. Acadia University (Up to 02:30 pm at K.C. Irving Center, Banquette: Fountain Commons)

8:00 am 10: 00 am	Travel to Wolfville		
10:00 am – 11:00 am	Keynote speech: Vijay Raghavan Title: Representations for Large-scale Sequence Data Mining: A Tale of Two Vector Space Models		
11:00 am – 12:30 pm	Contributed talks: (Auditorium) JRS9 (s2/1) 5 papers 57, 62, 74, 102, 111	Contributed talks: (Classroom) JRS10(s10/1) 4 papers 70, 89, 94, 103	Contributed talks: (JRS11 (s8) 5 papers 8, 16, 50, 69, 82
12:30 pm – 01:30 pm	Lunch		
01:30 pm – 02:30 pm	Keynote speech: Jian Pei Title: Some New Progress in Analyzing and Mining Uncertain and Probabilistic Data for Big Data Analytics		
2:30 pm – 5:30 pm	Sightseeing, Annapolis Valley: Grand Pre, Luckett Vineyards		
5:30 pm – 8:00 pm	Banquet: Fountain commons		
8:00 pm – 9:30 pm	Travel to Halifax		

S2/1: Three-way Decisions and Probabilistic Rough Sets (at KCIC) (October 12, 11:00 am – 12:30 pm)

- 57 - Dun Liu, Tianrui Li and Decui Liang - Three-way Decisions in Dynamic Decision-theoretic Rough Sets
- 62 - Hong Yu - A Cluster Ensemble Framework Based on Three-way Decisions
- 74 - Bing Zhou and Yiyu Yao - Comparison of Two Models of Probabilistic Rough Sets
- 102 - Jianlin Li, Xiaofei Deng and Yiyu Yao - Multistage email spam filtering with three-way decisions
- 111 - Huaxiong Li, Xian-Zhong Zhou, Bing Huang and Dun Liu - Cost-Sensitive Three-Way Decision: A Sequential Strategy

S10/1: Rules, Reducts, Ensembles (October 12, 11:00 am – 12:30 pm)

- 70 - Leijun Li, Qinghua Hu, Xiangqian Wu and Daren Yu - Exploring margin for dynamic ensemble selection
- 89 - Shusaku Tsumoto and Shoji Hirano - Evaluation of Incremental Change of Set-based Indices
- 94 - Sebastian Stawicki and Dominik Slezak - Recent Advances in Decision Bireducts: Complexity, Heuristics and Streams
- 103 - Yoshifumi Kusunoki, Jerzy Błaszczyński, Masahiro Inuiguchi and Roman Słowiński Empirical Risk Minimization for Variable Precision Dominance-based Rough Set Approach

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

S8: New trends in computing (October 12, 11:00 am – 12:30 pm)

- 8 - Minghua Pei, Dayong Deng and Houkuan Huang - Parallel Reducts: a Hashing Approach
- 16 - Junbo Zhang, Yun Zhu, Yi Pan and Tianrui Li - A Parallel Implementation of Computing Composite Rough Set Approximations on GPUs
- 50 - Tomasz Grześ, Maciej Kopczyński and Jarosław Stepaniuk - FPGA in Rough Set Based Core and Reduct Computation
- 69 - Ping Li, Jianyang Wu and Lin Shang - Fast Approximate Attribute Reduction with MapReduce
- 82 - Sheela Ramanna, Christopher Henry, James Peters and Tariq Alusaifeer - GPU Implementation of MCE approach to Finding Near Neighbourhoods

Sightseeing tour of the Valley – Grand Pre, Luckett Vineyards

- 2:30-2:50pm - travel to Grand Pre (via old Post Road, if possible for bus), else regular highway [everyone must take their stuff on bus]
- 2:50-3:00pm - introduction by Brigette Cooney – Interpretation Officer
- 3:00-3:30pm – Movie about Grand Pre
- 3:30-3:55pm – Quick Tour of Grand Pre
- 4:00-4:15pm – Travel to Luckett's Vinyard
- 4:15-4:30pm – Intro to Luckett's – Pete Luckett
- 4:30-5:30pm – Wine tour, free time to view valley, make a call on the phone (see http://www.luckettvineyards.com/contact-us)
- 5:30-5:45pm – Return to Acadia – Fountain Commons

Reception and Banquette

- 5:45-6:30pm – Reception – Snacks, Music, Cash bar
- 6:30-6:40pm – Welcome and Intro
- 6:40-7:30pm – Meal – buffet (Options: Lobster/Prime rib/Chicken/Vegetarian)
- 7:30-7:50pm – Entertainment and Lifetime Contributions Award
- 7:50-8:00pm - Finish–up and load bus

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

October 13, 2013. Saint Mary's University

09:15 am – 10:15 am	Keynote speech: Andrzej Skowron. Room No. AT-101 Title: 30 Years of Rough Sets and Future Perspectives		
10:15 am – 10:30 am	Coffee Break		
10:30 am – 12:45 pm (A short break at 11:30 am)	History and Future of Rough sets (6 papers) Room No. AT-101 115, 124, 118, 117, 116, 120		
12:45 pm – 01:45 pm	Thanksgiving Lunch – provided. SUB Student Center Cafe		
01:45 pm – 02:45 pm	Keynote speech: Bo Zhang. Room No. AT-101		
02:45 pm – 4:25 pm	Contributed talks: JRS15 (s1/1) 4 papers Room No. AT-101 7, 9, 43, 77	Contributed talks: JRS16 (s2/2) 5 papers Room No. AT-216 17, 30, 88, 99, 13	Contributed talks: Room No. AT-305 JRS13 (s7/2) 3 papers 65, 107, 108 JRS14 (s11/2) 2 papers 75, 96
04:30 pm – 6:00 pm	Room No. AT-101 • Demo of the Data Mining Competition System • IRSS meeting Closing Reception with Refreshment		

History and Future of Rough sets – I (Room No. AT-101) (October 13, 11:15 am – 12:45 pm)

- 124 - Michael Wong - Early Development of Rough Sets - from a personal perspective
- 115 - Hiroshi Sakai, Mao Wu, Naoto Yamaguchi and Michinori Nakata - Non-deterministic Information in Rough Sets: A Survey and Perspective
- 118 - Patrick Clark, Jerzy Grzymala-Busse and Wojciech Rzasa - Generalizations of Approximations
- 117 - Jingtao Yao and Yan Zhang - A Scientometrics Study of Rough Sets in Three Decades
- 116 - Yiyu Yao - Granular Computing and Sequential Three-Way Decisions
- 120 - Guoyin Wang, Changlin Xu and Hong Yu - Expression and Processing of Uncertainty Information - information on submission (future)

S1/1: Fuzzy and rough hybridization and applications (Room No. AT-101) (October 13, 2:45 pm – 4:25 pm)

- 7 - Manish Joshi and Pawan Lingras - Enhancing Rough Clustering with Outlier Detection based on Evidential Clustering
- 9 - Wei-Zhi Wu, Cang-Jian Gao, Tong-Jun Li and You-Hong Xu - On Dual Intuitionistic Fuzzy Rough Approximation Operators Determined by an Intuitionistic Fuzzy Implicator
- 43 - Qinrong Feng and Rui Li - Discernibility matrix based attribute reduction in intuitionistic fuzzy decision systems
- 77 - Anping Zeng, Tianrui Li, Chuan Luo and Junbo Zhang - A Fuzzy Rough Set Approach for Incrementally Updating Approximations in Hybrid Information System

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

S2/2: Three-way Decisions and Probabilistic Rough Sets (Room No. AT-216) (October 13, 2:45 pm – 4:25 pm)

- 17 - Youli Liu, Lei Pan, Xiuyi Jia, Chongjun Wang and Junyuan Xie - Three-way Decision based Overlapping Community Detection
- 30 - Yanping Zhang, Hang Xing, Huijin Zou and Shu Zhao - A three-way decisions model based on Constructive Covering Algorithm
- 88 - Tong-Jun Li and Wei-Zhi Wu - Boolean Covering Approximation Spaces and Its Reduction
- 99 - Nouman Azam and Jingtao Yao - Formulating Game Strategies in Game-Theoretic Rough Sets
- 13 - Weiwei Li, Zhiqiu Huang and Xiuyi Jia - Two phase classification based on three-way decisions

S7/2: Inconsistency, Incompleteness, non-determinism (Room No. AT-305) (October 13, 2:45 pm – 3:45 pm)
(Followed by) S11/2: Learning, Predicting, Modeling (Room No. AT-305) (October 13, 3:45 pm – 4:25 pm)

- 65 - Ying Yu, Duoqian Miao, Zhifei Zhang and Lei Wang - Rough Set Model for Data Mining in Inconsistent Information System
- 107 - Sinh Hoa Nguyen - Quick Algorithms for Attribute Reduction on Set-valued Decision Systems
- 108 - Hung Son Nguyen - Metric Based Attribute Reduction in Incomplete Decision Tables
- 75 - Khalid Shaker, Salwani Abdullah and Arwa Alqudsi - Hybridizing Meta-heuristics Approaches for Solving University Course Timetabling Problems
- 96 - Wojciech Świeboda, Michal Meina and Hung Son Nguyen - Weight learning for Document Tolerance Rough Set Model

History and Future of Rough sets – II (Room No. AT-101) (October 13, 4:30 pm – 6:00 pm)

- Demo of the Data Mining Competition System
- IRSS meeting

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

Dalhousie University, Welcome speech: October 10th, 2013, 10:00 am - 10:25 am
Stan Matwin

Stan Matwin is a Canada Research Chair (Tier 1), a Professor of Computer Science, and the Director of the Institute for Big Data Analytics at Dalhousie University. He is Distinguished University Professor (Emeritus) of Electrical Engineering and Computer Science at the University of Ottawa. He is also affiliated with the Institute for Computer Science of the Polish Academy of Sciences (IPI PAN) His research is in machine learning, data mining, and their applications, as well as in technological aspects of Electronic Commerce. Author and co-author of over 200 research papers, he has worked at universities in Canada, the U.S., Europe and Latin America, where in 1997 he held the UNESCO Distinguished Chair in Science and Sustainable Development. Former president of the Canadian Society for the Computational Studies of Intelligence (CSCSI) and of the IFIP Working Group 12.2 (Machine Learning). Founding Director of the Graduate Certificate in Electronic Commerce at University of Ottawa. Founding Director of the Information Technology Cluster of the Ontario Research Centre for Electronic Commerce. Chair of the NSERC Grant Selection Committee for Computer Science and member of the Board of Directors of Communications and Information Technology Ontario (CITO). Recipient of a CITO Champion of Innovation Award. Programme Committee Chair and Area Chair for a number of international conferences in AI and Machine Learning. Member of the Editorial Boards of the Machine Learning Journal, Computational Intelligence Journal, and the Intelligent Data Analysis Journal. Stan is a recipient of the Distinguished Service Award of the Canadian Artificial Intelligence Society (CAIAC). He is Fellow of the European Coordinating Committee for Artificial Intelligence and Fellow of the Canadian Artificial Intelligence Society.

Conference Program

Andrzej Skowron
Lifetime contributions recipient

Dalhousie University, October 10, 2013, 10:25 am - 10:50 am, Keynote speech
Title: Interactive Granular Computing

Saint Mary's University, October 13, 2013, 09:15 am – 10:15 am, Keynote speech, Room No. AT-101
Title: 30 Years of Rough Sets and Future Perspectives
October 13, 2013

Andrzej Skowron holds a Ph.D. degree in Mathematical Foundations of Computer Science from the University of Warsaw in Poland, Doctor of Science (Habilitation) degree in Mathematical Foundations of Computer Science from the University of Warsaw in Poland. In 1991 he received the Scientific Title of Professor.

Andrzej Skowron is Full Professor in the Faculty of Mathematics, Computer Science and Mechanics at Warsaw University. He is the head of the Logic Section in the Institute of Mathematics. He is a vice-chairman of the Scientific Council at Institute of Computer Science of the Polish Academy of Sciences and a member of Computer Science Committee of the Polish Academy of Sciences. From 1988 to 1990, he was the Deputy Dean of the Faculty of Mathematics, Computer Science and Mechanics at Warsaw University. From 1994 to 1999, he was also the Head of the Senate in the Polish.Japanese Institute of Information Technology.

Andrzej Skowron is the author and co-author of over 350 scientific publications, more than 20 edited books and several special issues of international journals like Pattern Recognition Letters, Neurocomputing, Computational Intelligence, Journal of Intelligent Information Systems, Journal of Intelligent Systems. His areas of expertise include soft computing methods and applications, reasoning with incomplete information, approximate reasoning, rough sets, rough mereology, granular computing, synthesis and analysis of complex objects, intelligent agents, knowledge discovery systems and advanced data mining techniques including process mining, decision support systems, adaptive and autonomous systems.

Since 1995 he is the Editor-in-Chief of Fundamenta Informaticae journal and a member of Editorial Boards of several others journals including Knowledge Discovery and Data Mining and Knowledge and Information Systems, An International Journal. He is the co-editor-in-chief of the journal LNCS Transactions on Rough Sets published by Springer.

Andrzej Skowron was the President of the International Rough Set Society from 1996 to 2000, and now he is a member of Steering Committee of IRSS. He served or is currently serving on the program committees of over 100 international conferences and workshops, as program committee member, program chair or co-chair. For example, he was the program chair of the 2005 IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT.05) and 2005 IEEE/WIC/ACM International Conference on Web Intelligence (France, 2005), the co-program chair of the first International Conference on Rough Sets and Current Trends in Computing (RSCTC 1998), IEEE International Conference on Granular Computing (GrC 2005) (Beijing, 2005), and the co-chair of the conference Trends in Logic III: In memoriam of Andrzej Mostowski, Helena Rasiowa, and Cecylia Rauszer (Poland, 2005).

He has delivered numerous invited talks at international conferences including a plenary talk at the 16-th IFIP World Computer Congress (Beijing, 2000). Some other invited by him talks in recent years: keynote talks at 8th International Conference on information Sciences (JCIS 2005) (Salt Lake City, USA, 2005), the First International Conference of Pattern Recognition and Machine Intelligence (Kolkata, India, 2005), 11th International Conference on Rough Sets, Fuzzy Sets, Data Mining and Granular Computing (RSFDGrC 2007), Toronto, Canada, May 14-16, 2007, invited talks at International Conference on Web Intelligence (WI-06) and International Conference on Intelligent Agent

Technology (IAT-06) (Hong Kong, China, 2006), Web Intelligence meets Brain Informatics (WImBI 2006), (Beijing, 2006), the 1st KES Symposium on Agent and Multi-Agent Systems . Technologies and Applications (Wroclaw, Poland, 2007).

Throughout his career Andrzej Skowron has won many awards for his achievements, including awards from the Ministry of Science, the Rector of Warsaw University, the Ministry of Education, Mazur.s Award of the Polish Mathematical Society, and Janiszewski.s Award of the Polish Mathematical Society. In 2003 he received the title of honorary professor from Chongqing University of Post and Telecommunication (China). In 2005 he has received the ACM Recognition of Service Award for Contributions to ACM. Recently, he was nominated by the Faculty of Mathematics, Computer Science, and Mechanics at Warsaw University as a candidate for the 2008 award of the First Premier of Poland for the scientific results.

In recent years he was involved in several national and international research and commercial projects related to, e.g., data mining (fraud detection, web mining), control of unmanned vehicles, medical decision support systems, Forex prediction, and approximate reasoning in distributed environments. He was the supervisor of over 20 PhD Thesis and 100 Master Thesis.

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Conference Program

Dalhousie University, October 10, 2013, 11:00 am - 12:00 pm, Keynote speech: Graham Toppin
Title: Toward Granular Scalability of Analytical Data Processing

Graham Toppin is currently a Vice President and Chief Technology Officer in Infobright. Leveraging his 15+ years of experience in architecting, implementing and supporting customer-centric solutions, he drives Infobright's product-development vision and processes, including research, development, quality assurance, and customer support. Prior to joining Infobright in 2009, he held several positions in Cordys, a business-process-management company. Before Cordys, he served as a Principal in Sockeye Supply Chain. His interests include Integration Technologies, Computational Intelligence, Database Technologies, Machine-generated Data Analytics, as well as Internet of Things.

Abstract: We discuss a novel approach to ad-hoc, interactive analytics over large machine-generated data. Our focus is on addressing the specific problems of carrying out investigative and predictive analytical workloads over rapidly changing data sets generated by machines and sensors being parts of large, emergent networks such as those described as the Internet of Things. We present an architectural framework and query methodology, which will enable processing of naturally distributed data streams in order to compute standard or partially granulated query results. We explain how a network of so called knowledge processors can assist in analytical operations by propagating statistical information about granules of original and dynamically derived data. We also show some practical scenarios where granulated query results can be passed to end users or other data processing modules. The distinguishing characteristics of our work are an emphasis on non-exact query and data manipulation methods, selective loading of data, as well as avoiding data duplication and query latency generally reserved for these types of large systems.

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Conference Program

Dalhousie University, October 10, 2013, 12:00 pm – 01:00 pm, Keynote speech: Sergei Kuznetsov
Title: Pattern structures for analyzing relational and imprecise data

Sergei O. Kuznetsov is a professor, head of School for Applied Mathematics and Information Science at the National Research University Higher School of Economics (HSE), Moscow, Russia. His interests are in methods and algorithms of knowledge discovery based on formal concept analysis. He is a member of the Editorial Boards of CLA, ICCS and ICFCA conferences which are central for the FCA community, he has chaired six conferences on FCA, Knowledge Discovery and Information Retrieval.

Abstract: Pattern structures were proposed as an extension of Formal Concept Analysis to complex descriptions. First Galois connections are defined, then closed descriptions, concepts, concept lattices, implications, association rules and other means of knowledge discovery are introduced. Projections of pattern structures provide means for approximate computations. Pattern structures are used in numerous applied domains from chemistry and bioinformatics to natural language processing, where data are given by graphs, strings, and vectors of intervals. Uncertainty in data is naturally modeled by interval pattern structures.

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Conference Program

Saint Mary's University, October 11, 2013, 10:00 am – 11:00 am, Keynote speech: Eugene Santos, Jr.
McNally auditorium
Title: Aggregation and De-aggregation: Explanation, End-to-End Analyses, and Emergence

Eugene Santos, Jr. received his B.S. ('85) in Mathematics and Computer Science from Youngstown State University, a M.S. ('86) in Mathematics (specializing in Numerical Analysis) from Youngstown State University, as well as Sc.M. ('88) and Ph.D. ('92) degrees in Computer Science from Brown University. He is currently Professor of Engineering in the Thayer School of Engineering at Dartmouth College, Hanover, NH. His areas of research interest include artificial intelligence, intent inferencing, social and cultural modeling, computational social science, automated reasoning, decision science, adversarial reasoning, user modeling, natural language processing, probabilistic reasoning, and knowledge engineering, verification and validation, protein folding, virtual reality, and active user interfaces. He is a Fellow of the IEEE and currently, Editor-in-Chief for the IEEE Transactions on Cybernetics (formerly IEEE Transactions on Systems, Man, and Cybernetics: Part B), an associate editor for the International Journal of Image and Graphics, and is also on the editorial advisor board for System and Information Sciences Notes and on the editorial boards for Journal of Intelligent Information Systems and Journal of Experimental and Theoretical Artificial Intelligence. He also has many hobbies including volleyball, music composition, wood working, science fiction, raising goldfish and Koi, and Chinese culture.

Abstract: The ability to aggregate information and knowledge from disparate and potentially conflicting sources is an important component in inferencing whether for sensor fusion, multi-expert decision-making, consensus formation, etc. However, de-aggregation is just as important as it is the natural dual in inferencing. When both can be done, we can then explain our inferences in order to demonstrate how the inferences came about, what were the contributing factors, and even ask what-if questions, just to name a few capabilities. This further leads to the ability to do end-to-end analyses since such aggregation and de-aggregation is addressing complex systems of systems. Lastly, this can now provide a formal mechanism to define and address emergence concretely for complex systems.

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

Saint Mary's University, October 11, 2013, 01:30 pm – 02:30 pm, Keynote speech: Boris Mirkin, McNally auditorium

Boris Mirkin is a Distinguished Professor of Applied Mathematics, Department of Data Analysis and Machine Intelligence, National Research University Higher School of Economics, Moscow, Russia, and Professor Emeritus, School of Computer Science and Information Systems, Birkbeck University of London, UK. He is interested in mathematical models, computational algorithms and programs for visualization, clustering and interpretation of data and texts with applications in sociology, marketing, genomics, ecology, and other areas. He has developed a number of innovative approaches and published about a hundred refereed papers in Russian and international journals, as well as several monographs of which the latest are .Clustering: A Data Recovery Approach., Taylor and Francis/CRC Press, 2012, and .Core Concepts in Data Analysis: Summarization, Correlation and Visualization., Springer, 2011. For further information see his web pages:

- www.dcs.bbk.ac.uk/~mirkin/ and

- www.hse.ru/en/org/persons/3954058.

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

Acadia University, October 12, 2013, 10:00 am – 11:00 am, Keynote speech: Vijay Raghavan
Title: Representations for Large-scale Sequence Data Mining: A Tale of Two Vector Space Models

Vijay Raghavan is the Distinguished Professor of Computer Science at the Center for Advanced Computer Studies and a co-director of the Laboratory for Internet Computing at UL Lafayette. His research interests are in information retrieval and extraction, data and web mining, multimedia retrieval, data integration, and literature-based discovery. He has published around 250 peer-reviewed research papers. These research contributions cumulatively accord him an h-index* of 30, based on citations to his publications in Scholar.Google. He has served as major adviser for 24 doctoral students and has garnered $10 million in external funding. Dr. Raghavan brings substantial technical expertise, interdisciplinary collaboration experience, and management skills to his projects. His service work at the university includes coordinating the Louis Stokes-Alliance for Minority Participation (LS-AMP) program since 2001. Raghavan has served as PC Chair, PC Co-chair or PC member in countless ACM and IEEE sponsored conferences. He received the IEEE ICDM 2005 Outstanding Service Award. Raghavan was an ACM National Lecturer from 1993 to 2006. He chaired the ICDM Awards Committee in 2006 and served as a committee member until 2008. He was a member of the Advisory Committee of the NSF Computer and Information Science and Engineering directorate, from 2008-2010. He is the Founding Director of the NSF-sponsored Industry University Cooperative Research Center, on the theme of Visual and Decision Informatics, since February 2012. He serves on the Executive Committee of the IEEE -TC on Intelligent Informatics and is an Associate Editor of the Web Intelligence and Agent Systems journal. He is an ACM Distinguished Scientist and an IEEE Senior Member.

Abstract: Analyzing and classifying sequence data based on structural similarities and differences is a mathematical problem of escalating relevance. Indeed, a primary challenge in designing machine learning algorithms to analyzing sequence data is the extraction and representation of significant features. This paper introduces a generalized sequence feature extraction model, referred to as the Generalized Multi-Layered Vector Spaces (GMLVS) model. Unlike most models that represent sequence data based on subsequences frequency, the GMLVS model represents a given sequence as a collection of features, where each individual feature captures the spatial relationships between two subsequences and can be mapped into a feature vector. The utility of this approach is demonstrated via two special cases of the GMLVS model, namely, Lossless Decomposition (LD) and the Multi-Layered Vector Spaces (MLVS). Experimental evaluation show the GMLVS-inspired models generated feature vectors that, combined with basic machine learning techniques, are able to achieve high classification performance.

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

Acadia University, October 12, 2013, 01:30 pm – 02:30 pm, Keynote speech: Jian Pei

Title: Some New Progress in Analyzing and Mining Uncertain and Probabilistic Data for Big Data Analytics

Jian Pei is currently Professor of Computing Science at the School of Computing Science at Simon Fraser University, Canada. He received a Ph.D. degree in Computing Science from Simon Fraser University, Canada, in 2002, under Dr. Jiawei Han's supervision. He also received a B. Eng. degree and a M. Eng. degree, both in Computer Science, from Shanghai Jiao Tong University, China, in 1991 and 1993, respectively. Since 2000, he has published one monograph and over 140 research papers in refereed journals and conferences, has served in the organization committees and the program committees of over 130 international conferences and workshops, and has been a reviewer for the leading academic journals in his fields. He is an associate editor-in-chief of IEEE Transactions of Knowledge and Data Engineering (TKDE), and an associate editor or editorial board member of ACM Transactions on Knowledge Discovery from Data (TKDD), Data Mining and Knowledge Discovery, Statistical Analysis and Data Mining, Intelligent Data Analysis, and Journal of Computer Science and Technology. He is a senior member of the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronics Engineers (IEEE). He is an ACM Distinguished Speaker. He is the recipient of the British Columbia Innovation Council 2005 Young Innovator Award, an NSERC 2008 Discovery Accelerator Supplements Award (100 awards cross the whole country, 10 in computer science), an IBM Faculty Award (2006), a KDD Best Application Paper Award (2008), and an IEEE Outstanding Paper Award (2007).

Abstract: Uncertainty is ubiquitous in big data. Consequently, analyzing and mining uncertain and probabilistic data is important in big data analytics. In this talk, we review some recent progress in mining uncertain and probabilistic data in the hope that the problems, progress, and challenges can inspire interdisciplinary dialogues and lead to new research opportunities.

2013 Joint Rough Set Symposium

INFOBRIGHT SAINT MARY'S UNIVERSITY SINCE 1802 DALHOUSIE UNIVERSITY ACADIA UNIVERSITY

Conference Program

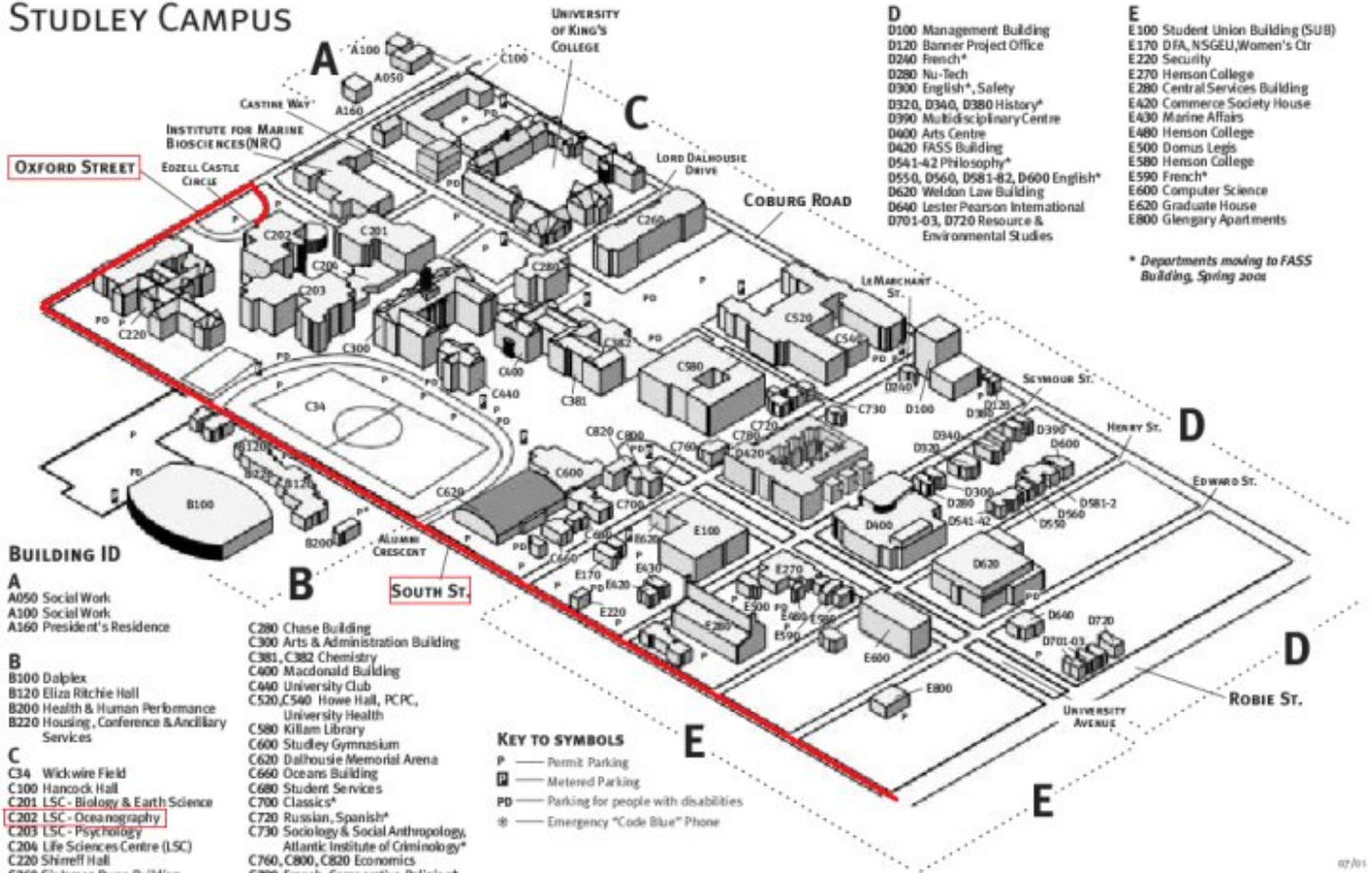
October 13, 2013, 01:45 pm – 02:45 pmKeynote speech: Bo Zhang. Room No. AT-101

Bo Zhang is a professor of Computer Science and Technology Department of Tsinghua University, the fellow of Chinese Academy of Sciences. In 1958 he graduated from Automatic Control Department of Tsinghua University, and became a faculty member since then. From 1980/02 to 11982/02, he visited University of Illinois at Urbana-Champaign, USA as a scholar. In 2011, Hamburg University awarded him Honorary Doctor of Natural Sciences. He is now the member of Technical Advisory Board of Microsoft Research Asia. He is engaged in the research on artificial intelligence, artificial neural networks, machine learning, and so on. And he also is engaged in the research applying technology that applies the theories mentioned above into pattern recognition, knowledge engineering, and robotics. In these fields, he has published over 200 papers and 5 monographs (chapters). His monograph involved "Theory and Applications of Problem Solving" in Chinese/English version won the special-class prize of excellent academic monograph from College and University Press awarded by State Educational Commission. His a academic achievement won ICL European Artificial Intelligence Prize, etc. In addition, he took part in building up thee State Key Lab of Intelligent Technology and Systems and served as director of the lab from 1990 to 1996. Recently, he founded research group for cognitive computation and multimedia information processing. The group has got some important results in machine learning, image and video analysis and retrieval.

DALHOUSIE UNIVERSITY CAMPUS

STUDLEY • CARLETON • SEXTON

STUDLEY CAMPUS



BUILDING ID

A
A050 Social Work
A100 Social Work
A160 President's Residence

B
B100 Dalplex
B120 Eliza Ritchie Hall
B200 Health & Human Performance
B220 Housing, Conference & Ancillary Services

C
C34 Wickwire Field
C100 Hancock Hall
C201 LSC - Biology & Earth Science
C202 LSC - Oceanography
C203 LSC - Psychology
C204 Life Sciences Centre (LSC)
C220 Shirreff Hall
C260 Sir James Dunn Building
C280 Chase Building
C300 Arts & Administration Building
C381, C382 Chemistry
C400 Macdonald Building
C440 University Club
C520, C540 Howe Hall, PCPC, University Health
C580 Killam Library
C600 Studley Gymnasium
C620 Dalhousie Memorial Arena
C660 Oceans Building
C680 Student Services
C700 Classics*
C720 Russian, Spanish*
C730 Sociology & Social Anthropology, Atlantic Institute of Criminology*
C760, C800, C820 Economics
C780 French, Comparative Religion*

D
D100 Management Building
D120 Banner Project Office
D240 French*
D280 Nu-Tech
D300 English*, Safety
D320, D340, D380 History*
D390 Multidisciplinary Centre
D400 Arts Centre
D420 FASS Building
D541-42 Philosophy*
D550, D560, D581-82, D600 English*
D620 Weldon Law Building
D640 Lester Pearson International
D701-03, D720 Resource & Environmental Studies

E
E100 Student Union Building (SUB)
E170 DFA, NSGEU, Women's Ctr
E220 Security
E270 Henson College
E280 Central Services Building
E420 Commerce Society House
E430 Marine Affairs
E480 Henson College
E500 Domus Legis
E580 Henson College
E590 French*
E600 Computer Science
E620 Graduate House
E800 Glengary Apartments

** Departments moving to FASS Building, Spring 2001*

KEY TO SYMBOLS

P — Permit Parking
Ⓟ — Metered Parking
PD — Parking for people with disabilities
✱ — Emergency "Code Blue" Phone

07/01

SAINT MARY'S UNIVERSITY SINCE 1802

One University. One World. Yours.

CAMPUS MAP

NE Campus Construction

A	Atrium	**LA**	Loyola Academic Complex	**P**	Parking	**HC**	Homburg Centre for Health and Wellness
AA	Alumni Arena	**LR**	Loyola Residence	**PM**	Parking Meters	**UA**	Development/Alumni
AG	Art Gallery	**ME**	McNally East Wing	**PPL**	Patrick Power Library	**VR**	Vanier Residence
B	Burke Building	**MM**	McNally Main	**RR**	Rice Residence	**980**	TESL Centre
C	Cafeteria	**MN**	McNally North Wing	**S**	Science Building	**5960**	Gorsebrook Research Institute for Atlantic Canada Studies
CE	Continuing Education	**MS**	McNally South Wing	**SB**	Sobey Building		
EA	External Affairs	**O**	The Oaks/International Activities	**SC**	O'Donnell Hennessey Student Centre		

All main buildings are wheelchair accessible and most are connected by tunnels or walkways.

ACADIA UNIVERSITY Campus Civic Map

Acadia Street

27 Wong International Centre
50 Vaughan Memorial Library
31/33 Hayward House
45 Manning Memorial Chapel

Crowell Drive

18 Whitman House (Res.)
22 Seminary House (Res.)
23 Raymond House
26 Fountain Commons
35 Chipman House (Res.)
38 Willett House

Elm Avenue

20 Central Heating Plant & Tank Farm
24 DeWolfe Building

Highland Avenue

10 Beveridge Arts Centre
24 Centre for Organizational Research & Development
30 Students' Centre (Old and New SUB) Safety & Security Office
38 Acadia Divinity College
44 Wheelock Dining Hall/ Campus Bookstore
48 SRMK Outdoor Activity Centre
60 Crowell Tower (Res.)

Horton Avenue

3 Godfrey House
7 Bancroft House
12 Harvey Denton Hall
22 Dennis House (Res.)
24 Chase Court (Res.)

Main Street

503/505 Residential
504 Festival Theatre
512 Alumni Hall
550 Acadia Athletics Complex

Park Street

6 Residential
8 Residential

University Avenue

6 Elliott Hall
12 Huggins Science Hall
15 University Hall
18 Horton Hall
21 Rhodes Hall
24 Patterson Hall
27 Carnegie Hall
31 Emmerson Hall
32 K.C. Irving Centre
37 Clark Commons
39 Roy Jodrey Hall (Res.)
41 Christofor Hall (Res.)
43 Eaton House (Res.)
50 Irving Support Centre
52 DeWolfe House
55 Cutten House
56 Residential
58 Residence
61 Robbie Roscoe Services Building (Physical Plant)
67 Service Building Garage

Westwood Avenue

11 Academic
12 Residential
17 University Faculty Club
20 Residential
23 War Memorial House (Res.)
24 Residential
26 Residential
33 Biology Building
34 Residence
36 Residential
46 Residential
50 Residential
54 Residential

- 24 Hour Permit Parking
- Handicap Parking
- Permit Parking / No Overnight
- Meters
- Pay & Display
- Free Parking / No Overnight
- Residence
- Student Health Centre
- Safety & Security Office
- Emergency Telephone
- Locked Gate: Arrange access through Safety & Security.

Share the Air
Acadia University

The Acadia University Campus is Smoke and Tobacco Free.
For your convenience, receptacles for smoking materials are located in a number of locations on the periphery of campus.

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