BARTOSZ KRAWCZYK

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Google Scholar: `https://scholar.google.com/citations?user=0GrFcZsAAAAJ`
ResearchGate: `https://www.researchgate.net/profile/Bartosz-Krawczyk`
dblp: `https://dblp.org/pid/26/11077`

RESEARCH INTERESTS

Machine learning:	class imbalance, ensemble learning, robust algorithms, big data
Data streams:	concept drift, adaptive learning, active learning
Deep learning:	continual and lifelong learning, adversarial learning, generative models, XAI
Medical informatics:	image analysis, decision support systems, activity recognition

EDUCATION

Ph.D. in Computer Science   *Oct. 2012 – Oct. 2015*
Wroclaw University of Science and Technology, Poland
Dissertation: Forming and Pruning One-Class Classifier Ensembles
Advisors: Prof. Michal Wozniak and Prof. Francisco Herrera
Best dissertation award from Polish Artificial Intelligence Society

M.Sc. in Computer Science   *Feb. 2011 – Jul. 2012*
Wroclaw University of Science and Technology, Poland
Dissertation: Combining One-Class Classifiers
Advisor: Prof. Michal Wozniak
Best M.Sc. dissertation award from Wroclaw University of Science and Technology

B.Sc. in Computer Science   *Oct. 2007 – Jan. 2011*
Wroclaw University of Science and Technology, Poland
Dissertation: Machine Learning for ECG Signal Classification
Advisor: Prof. Marek Kurzynski
Best B.Sc. dissertation award from Wroclaw University of Science and Technology

ACADEMIC APPOINTMENTS

Assistant Professor   *Aug. 2016 – present*
Department of Computer Science
Virginia Commonwealth University
Richmond VA, USA

Assistant Professor   *Nov. 2015 – Jul. 2016*
Department of Systems and Computer Networks
Wroclaw University of Science and Technology
Wroclaw, Poland

Research Assistant   *Oct. 2012 – Oct. 2015*
Department of Systems and Computer Networks
Wroclaw University of Science and Technology
Wroclaw, Poland

FUNDING

Continual Lifelong Learning for Intelligent Manufacturing   *2022 – 2025*
Funding source: Ho-Ho-Kus Inc.
Funding amount: $240,000
Role: PI

Bridge to Computer Science at Virginia Commonwealth University   *2022 – 2023*
Funding source: MS Pathways to Computing Consortium
Funding amount: $66,500
Role: PI

High-throughput Power Edge System for Big Data & Modeling   *2018 – 2020*
Funding source: State Council of Higher Education for Virginia
Funding amount: $172,653
Role: Co-PI

Hate Speech Detection on Amazon Reviews using Data Stream Mining on Spark and AWS   *2018 – 2019*
Funding source: Amazon
Funding amount: $25,000 + $50,000 (in form of AWS credit)
Role: Co-PI

COURSES TAUGHT

Image Analysis (graduate)   *Aug. 2016 – present*
class size: 15-25 students

Introduction to Operating Systems (undergraduate)   *Aug. 2016 – present*
class size: 75-90 students

Introduction to machine learning (graduate)   *Aug. 2012 – Jul. 2016*
class size: 40-60 students

Advanced machine learning (graduate)   *Aug. 2012 – Jul. 2016*
class size: 35-50 students

Data science and knowledge discovery (undergraduate)   *Aug. 2012 – Jul. 2016*
class size: 100-150 students

Medical informatics (undergraduate)   *Aug. 2012 – Jul. 2016*
class size: 100-150 students

Databases (undergraduate)   *Aug. 2012 – Jul. 2016*
class size: 100-150 students

Object-oriented programming (undergraduate)   *Aug. 2012 – Jul. 2016*
class size: 150-200 students

AWARDS AND HONORS

1. Recognition among top 2% of most cited researchers in AI field by Stanford University ranking *2021 - 2022*
2. Research excellence award from VCU Department of Computer Science (five times) *2016 – 2020*
3. Teaching excellence award from VCU Department of Computer Science (two times) *2019 – 2020*
4. Best Ph.D Thesis Award, by Polish Artificial Intelligence Society *2017*
5. IEEE Outsanding Leadership Award *2015*
6. START Scholarship for best polish young scientists, from Foundation for Polish Science (2nd time) *2015*
7. Scholarship for outstanding scientific achievements, from Polish Ministry of Science (2nd time) *2015*
8. IEEE Richard E. Merwin Scholarship *2014*
9. IEEE Travel Award for distinctive paper, at IEEE World Congress on Computational Intelligence *2014*
10. Czeslaw Rodkiewicz Foundation Scholarship, for merging technical sciences with medicine *2014*
11. START Scholarship for best polish young scientists from Foundation for Polish Science *2014*
12. Scholarship for outstanding scientific achievements from Polish Ministry of Science *2014*
13. Hugon Steinhaus Award for the best Ph.D. Candidate in the mathematical field *2013*
14. IBM Smarter Planet Innovation Award in the Smarter Communications category *2012*
15. IBM Industry Skills Innovation Award in the Smarter Healthcare category *2010*

SERVICE

1. RamHacks (VCU Computer Science Hackathon) Chair – raised $40,000 from sponsors *2021 – present*
2. VCU High School Programming Contest Chair – raised $10,000 from sponsors (annually) *2016 – present*
3. NSF panelist for III: medium panel *2019 – 2022*
4. NSF panelist for III: small panel (*2020 – 2022*
5. NSF panelist for RI: medium panel *2020 – 2022*
6. NSF panelist for CISE-MSI panel *2020 – 2021*
7. Army Research Office panelist *2018 – 2022*
8. VCU commercialization fund panelist *2017 – 2022*
9. Polish National Science Foundation, computer science panel *2017 – 20212*
10. Swiss National Science Foundation, artificial intelligence panel *2018 – 2022*
11. Brazilian Center for Science and Technology, computer science panel *2018 – 2020*

EDITORIAL BOARD MEMBER

1. Applied Soft Computing journal (Elsevier) — *2018 - present*

PROGRAM COMMITTEE MEMBER

1. KDD (Senior Program Committee) — *2021 – present*
2. AAAI — *2018 – present*
3. IJCAI — *2018 – present*
4. NeurIPS (reviewer) — *2017 – present*
5. ECML-PKDD — *2020 – present*
6. PAKDD — *2021 – present*
7. IJCNN — *2019 – present*
8. DSAA — *2020 – present*
9. FUZZ-IEEE — *2018 – present*
10. ICCS — *2017 – present*
11. IEEE BigData — *2020 – present*
12. IEEE SMC — *2019 – present*

JOURNAL REVIEWER

1. IEEE TPAMI — *2019 – present*
2. IEEE TNNLS — *2016 – present*
3. IEEE TCYB (reviewer) — *2016 – present*
4. IEEE TKDE — *2015 – present*
5. JMLR — *2016 – present*
6. Machine Learning — *2018 – present*
7. Pattern Recognition — *2014 – present*
8. Information Fusion — *2014 – present*
9. Information Sciences — *2014 – present*
10. ACM TKDD — *2019 – present*
11. ACM TIST — *2020 – present*
12. KAIS — *2018 – present*
13. Knowledge-Based Systems — *2015 – present*
14. Neurocomputing — *2014 – present*
15. Computational Intelligence — *2016 – present*

INVITED KEYNOTE TALKS

Learning from imbalanced and continually streaming data *Aug. 2022*
at 4th Workshop on Deep Learning Practice and Theory for High-Dimensional Sparse and Imbalanced Data of 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining KDD 2022
Washington DC, USA

Learning with Imbalanced Data Streams *Sept. 2021*
at 3rd Workshop on Learning with Imbalanced Domains of European Conference on Machine Learning and Principles of Data Mining and Knowledge Discovery ECML-PKDD 2021
Bilbao, Spain (virtual)

Learning from imbalanced and difficult data *Jun. 2020*
at 19th International Conference on Artificial Intelligence and Soft Computing ICAISC 2020
Zakopane, Poland (virtual)

Active and semi-supervised learning from drifting data streams *Sept. 2017*
at 1st Workshop on Active Learning of European Conference on Machine Learning and Principles of Data Mining and Knowledge Discovery ECML-PKDD 2017
Skopje, Macedonia

Learning from imbalanced data – perspectives and challenges *Jun. 2017*
Hybrid Artificial Intelligence Systems Conference HAIS 2017
La Rioja, Spain

Ensemble learning from drifting data streams *May 2017*
at 10th International Conference on Computer Recognition Systems CORES 2017
Polanica Zdroj, Poland

TUTORIAL ORGANIZER AND PRESENTER

Big data stream mining *Dec. 2020*
at IEEE International Conference on Big Data (BigData 2020), virtual

Learning from non-stationary data streams *Oct. 2019*
at 6th IEEE International Conference on Data Science and Advanced Analytics (DSAA 2019), Washington DC, USA

TECHNICAL INVITED TALKS AT SEMINARS

Learning from imbalanced big data *Oct. 2021*
at Department of Computer Science, American University, Washington DC, USA

Contemporary challenges of data stream mining *Sept. 2019*
at Department of Computer Science, University of Basque Country, San Sebastian, Spain

Quo Vadis ensemble learning *Oct. 2017*
at Department of Computer Science, University of Granada, Granada, Spain

Current state of learning from imbalanced data *May 2017*
at Department of Computer Science and Data Analytics, University of Poznan, Poznan, Poland

Learning from streaming and imbalanced data *Feb. 2016*
Department of Computer Science, University of Waikato, Hamilton, New Zealand

Adapting to concept drift with ensemble classifiers *Oct. 2015*
at Department of Computer Science, University of Granada, Granada, Spain

Online learning algorithms for drifting and evolving data *Sept. 2014*
at Department of Computer Science, University of Granada, Granada, Spain

One-class classification for multi-class datasets *May 2014*
at Department of Computer Science and Electrical Engineering, AGH University of Technology, Krakow, Poland

Machine learning for early breast cancer detection *Jun. 2011*
at Department of Computer Science, Loughborough University, Loughborough, UK

POPULAR SCIENCE INVITED TALKS

AI and ML – road to success *May. 2021*
at College of Computer Science, Wroclaw University of Science and Technology, Wroclaw, Poland

Artificial intelligence fights cancer *Apr. 2021*
at Woman's Club of Richmond, Richmond VA, USA

Why study Computer Science? *Feb. 2021*
at VCU High School Programming Contest, Richmond VA, USA

Data science- why should I study it? *Apr. 2019*
at VCU Computer Science Open Day, Richmond VA, USA

Big data streams and their business value *Sept. 2018*
at School of Business, Virginia Commonwealth University, Richmond VA, USA

Artificial intelligence in medicine *May 2017*
at Woman's Club of Richmond, Richmond VA, USA

PH.D. STUDENTS ADVISED

Filip Guzy *2020 – present*
Thesis: Lifelong learning from data streams
Wroclaw University of Science and Technology, Poland
co-supervised with Prof. Michal Wozniak
Expected graduation date: June 2024

Lukasz Korycki *2018 – 2022*
Thesis: Continual learning from stationary and non-stationary data
Virginia Commonwealth University
Graduated: May 2022

William Sleeman IV *2017 – 2021*
Thesis: Learning from imbalanced big data using Apache Spark
Virginia Commonwealth University
Graduated: November 2021

Michal Koziarski *2017 – 2021*
Thesis: Oversampling methods for imbalanced multi-dimensional data
AGH University of Science and Technology, Poland
co-supervised with Prof. Boguslaw Cyganek
Graduated: November 2021

UNDERGRADUATE RESEARCH STUDENTS ADVISED

Shahad Alaydaroos *2022 – present*
Research: Deep learning for multi-class imbalanced NLP
Virginia Commonwealth University
Expected graduation date: May 2023

Charlie Dil *2022 – present*
Research: Convolutional Neural Networks for large-scale data representation learning
Virginia Commonwealth University
Expected graduation date: May 2023

Tara Ram Mohan *2021 – 2022*
Research: Deep learning for imbalanced time series
Virginia Commonwealth University
Graduated: May 2022

Sean Youngstone *2021 – 2022*
Research: Representation learning for non-stationary time series
Virginia Commonwealth University
Graduated: May 2022

Dominic Dao *2021 – 2022*
Research: Deep oversampling for imbalanced data classification
Virginia Commonwealth University
Graduated: May 2022

Andriy Mulyar *2018 – 2020*
Research: New methods for efficient decision tree induction
Virginia Commonwealth University
Graduated: May 2020

Samantha Palmer *2016 – 2017*
Research: Data stream preprocessing under noisy class labels
Virginia Commonwealth University
Graduated: May 2017

BOOKS AUTHORED

1. Alberto Fernandez, Salvador García, Mikel Galar, Ronaldo C. Prati, Bartosz Krawczyk, Francisco Herrera: Learning from Imbalanced Data Sets. Springer 2018, ISBN 978-3-319-98073-7, pp. 1-377

JOURNAL ARTICLES

1. Gabriel Aguiar, Bartosz Krawczyk, Alberto Cano: A survey on learning from imbalanced data streams: taxonomy, challenges, empirical study, and reproducible experimental framework. *Machine Learning* accepted, in press (2022)
2. Kushankur Ghosh, Colin Bellinger, Roberto Corizzo, Paula Branco, Bartosz Krawczyk, Nathalie Japkowicz: The Class Imbalance Problem in Deep Learning. *Machine Learning* https://doi.org/10.1007/s10994-022-06268-8 (2022)
3. Damien Dablain, Bartosz Krawczyk, Nitesh V. Chawla: DeepSMOTE: Fusing Deep Learning and SMOTE for Imbalanced Data. *IEEE Transactions on Neural Networks and Learning Systems* doi.org/10.1109/TNNLS.2021.3136503 (2022)
4. Lukasz Korycki, Bartosz Krawczyk: Adversarial Concept Drift Detection under Poisoning Attacks for Robust Data Stream Mining. *Machine Learning* doi.org/10.1007/s10994-022-06177-w (2022)
5. Alberto Cano, Bartosz Krawczyk: ROSE: Robust Online Self-Adjusting Ensemble for Continual Learning on Imbalanced Drifting Data Streams. *Machine Learning* 111(7): 2561-2599 (2022)
6. Lukasz Korycki, Bartosz Krawczyk: Instance exploitation for learning temporary concepts from sparsely labeled drifting data streams. *Pattern Recognition*. 129: 108749 (2022)

7. Bartosz Krawczyk: Tensor decision trees for continual learning from drifting data streams. *Machine Learning* 110: 3015–3035 (2021)

8. William C. Sleeman IV, Bartosz Krawczyk: Multi-class imbalanced big data classification on Spark. *Knowledge-Based Systems* 212: 106598 (2021)

9. Martha Roseberry, Bartosz Krawczyk, Youcef Djenouri, Alberto Cano: Self-adjusting k nearest neighbors for continual learning from multi-label drifting data streams. *Neurocomputing* 442: 10-25 (2021)

10. Sina Ghadermarzi, Bartosz Krawczyk, Jiangning Song, Lukasz Kurgan: XRRpred: accurate predictor of crystal structure quality from protein sequence. *Bioinformatics* 37(23): 4366-4374 (2021)

11. Bartosz Krawczyk, Michal Koziarski, Michal Wozniak: Radial-Based Oversampling for Multiclass Imbalanced Data Classification. *IEEE Transactions on Neural Networks and Learning Systems* 31(8): 2818-2831 (2020)

12. Alberto Cano, Bartosz Krawczyk: Kappa Updated Ensemble for drifting data stream mining. *Machine Learning* 109(1): 175-218 (2020)

13. Michal Koziarski, Michal Wozniak, Bartosz Krawczyk: Combined Cleaning and Resampling algorithm for multi-class imbalanced data with label noise. *Knowledge-Based Systems*. 204: 106223 (2020)

14. William C. Sleeman IV, Joseph Nalluri, Khajamoinuddin Syed, Preetam Ghosh, Bartosz Krawczyk, Michael Hagan, Jatinder Palta, Rishabh Kapoor: A Machine Learning method for relabeling arbitrary DICOM structure sets to TG-263 defined labels. *Journal of Biomedical Informatics* 109: 103527 (2020)

15. Martha Roseberry, Bartosz Krawczyk, Alberto Cano: Multi-Label Punitive kNN with Self-Adjusting Memory for Drifting Data Streams. *ACM Transactions on Knowledge Discovery from Data* 13(6): 60:1-60:31 (2019)

16. Przemyslaw Skryjomski, Bartosz Krawczyk, Alberto Cano: Speeding up k-Nearest Neighbors classifier for large-scale multi-label learning on GPUs. *Neurocomputing* 354: 10-19 (2019)

17. Michal Koziarski, Bartosz Krawczyk, Michal Wozniak: Radial-Based oversampling for noisy imbalanced data classification. *Neurocomputing* 345: 19-33 (2019)

18. José Ramón Cano, Pedro Antonio Gutiérrez, Bartosz Krawczyk, Michal Wozniak, Salvador García: Monotonic classification: An overview on algorithms, performance measures and data sets. *Neurocomputing* 341: 169-182 (2019)

19. Bartosz Krawczyk, Isaac Triguero, Salvador García, Michal Wozniak, Francisco Herrera: Instance reduction for one-class classification. *Knowledge and Information Systems* 59(3): 601-628 (2019)

20. Alberto Cano, Bartosz Krawczyk: Evolving rule-based classifiers with genetic programming on GPUs for drifting data streams. *Pattern Recognition* 87: 248-268 (2019)

21. Anabel Gómez-Ríos, Siham Tabik, Julián Luengo, A. S. M. Shihavuddin, Bartosz Krawczyk, Francisco Herrera: Towards highly accurate coral texture images classification using deep convolutional neural networks and data augmentation. *Expert Systems with Applications* 118: 315-328 (2019)

22. Bartosz Krawczyk, Bridget T. McInnes: Local ensemble learning from imbalanced and noisy data for word sense disambiguation. *Pattern Recognition* 78: 103-119 (2018)

23. Bartosz Krawczyk, Mikel Galar, Michal Wozniak, Humberto Bustince, Francisco Herrera: Dynamic ensemble selection for multi-class classification with one-class classifiers. *Pattern Recognition* 83: 34-51 (2018)

24. Bartosz Krawczyk, Alberto Cano: Online ensemble learning with abstaining classifiers for drifting and noisy data streams. *Applied Soft Computing* 68: 677-692 (2018)

25. Pawel Ksieniewicz, Bartosz Krawczyk, Michal Wozniak: Ensemble of Extreme Learning Machines with trained classifier combination and statistical features for hyperspectral data. *Neurocomputing* 271: 28-37 (2018)

26. Bartosz Krawczyk, Leandro L. Minku, João Gama, Jerzy Stefanowski, Michal Wozniak: Ensemble learning for data stream analysis: A survey. *Information Fusion* 37: 132-156 (2017)

27. Bartosz Krawczyk: Active and adaptive ensemble learning for online activity recognition from data streams. *Knowledge-Based Systems* 138: 69-78 (2017)

28. Sergio Ramírez-Gallego, Bartosz Krawczyk, Salvador García, Michal Wozniak, José Manuel Benítez, Francisco Herrera: Nearest Neighbor Classification for High-Speed Big Data Streams Using Spark. *IEEE Transactions on Systems, Man, and Cybernetics: Systems* 47(10): 2727-2739 (2017)

29. Sergio Ramírez-Gallego, Bartosz Krawczyk, Salvador García, Michal Wozniak, Francisco Herrera: A survey on data preprocessing for data stream mining: Current status and future directions. *Neurocomputing* 239: 39-57 (2017)

30. Bartosz Krawczyk, Boguslaw Cyganek: Selecting locally specialised classifiers for one-class classification ensembles. *Pattern Analysis and Applications* 20(2): 427-439 (2017)

31. Michal Koziarski, Bartosz Krawczyk, Michal Wozniak: The deterministic subspace method for constructing classifier ensembles. *Pattern Analysis and Applications* 20(4): 981-990 (2017)

32. Jerzy Kowalski, Bartosz Krawczyk, Michal Wozniak: Fault diagnosis of marine 4-stroke diesel engines using a one-vs-one extreme learning ensemble. *Engineering Applications of AI* 57: 134-141 (2017)

33. Bartosz Krawczyk: Learning from imbalanced data: open challenges and future directions. *Progress in AI* 5(4): 221-232 (2016)

34. José A. Sáez, Bartosz Krawczyk, Michal Wozniak: Analyzing the oversampling of different classes and types of examples in multi-class imbalanced datasets. *Pattern Recognition* 57: 164-178 (2016)

35. Bartosz Krawczyk, Michal Wozniak: Dynamic classifier selection for one-class classification. *Knowledge-Based Systems* 107: 43-53 (2016)

36. Zhongliang Zhang, Bartosz Krawczyk, Salvador García, Alejandro Rosales-Pérez, Francisco Herrera: Empowering one-vs-one decomposition with ensemble learning for multi-class imbalanced data. *Knowledge-Based Systems* 106: 251-263 (2016)

37. Bartosz Krawczyk, Mikel Galar, Lukasz Jelen, Francisco Herrera: Evolutionary undersampling boosting for imbalanced classification of breast cancer malignancy. *Applied Soft Computing* 38: 714-726 (2016)

38. Bartosz Krawczyk, Michal Wozniak: Untrained weighted classifier combination with embedded ensemble pruning. *Neurocomputing* 196: 14-22 (2016)

39. José A. Sáez, Bartosz Krawczyk, Michal Wozniak: On the Influence of Class Noise in Medical Data Classification: Treatment Using Noise Filtering Methods. *Applied Artificial Intelligence* 30(6): 590-609 (2016)

40. Boguslaw Cyganek, Manuel Graña, Bartosz Krawczyk, Andrzej Kasprzak, Piotr Porwik, Krzysztof Walkowiak, Michal Wozniak: A Survey of Big Data Issues in Electronic Health Record Analysis. *Applied Artificial Intelligence* 30(6): 497-520 (2016)

41. Bartosz Krawczyk, Michal Wozniak, Francisco Herrera: On the usefulness of one-class classifier ensembles for decomposition of multi-class problems. *Pattern Recognition* 48(12): 3969-3982 (2015)

42. Boguslaw Cyganek, Bartosz Krawczyk, Michal Wozniak: Multidimensional data classification with chordal distance based kernel and Support Vector Machines. *Engineering Applications of AI* 46: 10-22 (2015)

43. Bartosz Krawczyk: One-class classifier ensemble pruning and weighting with firefly algorithm. *Neurocomputing* 150: 490-500 (2015)

44. Bartosz Krawczyk, Gerald Schaefer, Michal Wozniak: A hybrid cost-sensitive ensemble for imbalanced breast thermogram classification. *Artificial Intelligence in Medicine* 65(3): 219-227 (2015)

45. Bartosz Krawczyk, Michal Wozniak: One-class classifiers with incremental learning and forgetting for data streams with concept drift. *Soft Computing* 19(12): 3387-3400 (2015)

46. Bartosz Krawczyk, Michal Wozniak: Incremental weighted one-class classifier for mining stationary data streams. *Journal of Computational Science* 9: 19-25 (2015)

47. Bartosz Krawczyk: Forming Ensembles of Soft One-Class Classifiers with Weighted Bagging. *New Generation Computing* 33(4): 449-466 (2015)

48. Bartosz Krawczyk, Michal Wozniak, Boguslaw Cyganek: Clustering-based ensembles for one-class classification. *Information Sciences* 264: 182-195 (2014)

49. Konrad Jackowski, Bartosz Krawczyk, Michal Wozniak: Improved Adaptive Splitting and Selection: the Hybrid Training Method of a Classifier Based on a Feature Space Partitioning. *International Journal of Neural Systems* 24(3) (2014)

50. Bartosz Krawczyk, Michal Wozniak, Gerald Schaefer: Cost-sensitive decision tree ensembles for effective imbalanced classification. *Applied Soft Computing* 14: 554-562 (2014)

51. Bartosz Krawczyk, Gerald Schaefer: A hybrid classifier committee for analysing asymmetry features in breast thermograms. *Applied Soft Computing* 20: 112-118 (2014)

52. Bartosz Krawczyk, Michal Wozniak: Diversity measures for one-class classifier ensembles. *Neurocomputing* 126: 36-44 (2014)

53. Bartosz Krawczyk, Pawel Filipczuk: Cytological image analysis with firefly nuclei detection and hybrid one-class classification decomposition. *Engineering Applications of AI* 31: 126-135 (2014)

54. Bartosz Krawczyk, Gerald Schaefer: Breast Thermogram Analysis Using Classifier Ensembles and Image Symmetry Features. *IEEE Systems Journal* 8(3): 921-928 (2014)

55. Gerald Schaefer, Bartosz Krawczyk, M. Emre Celebi, Hitoshi Iyatomi: An ensemble classification approach for melanoma diagnosis. *Memetic Computing* 6(4): 233-240 (2014)

56. Bartosz Krawczyk, Michal Wozniak: Influence of Distance Measures on the Effectiveness of One-Class Classification Ensembles. *Applied Artificial Intelligence* 28(3): 258-271 (2014)

57. Pawel Filipczuk, Bartosz Krawczyk, Michal Wozniak: Classifier ensemble for an effective cytological image analysis. *Pattern Recognition Letters* 34(14): 1748-1757 (2013)

58. Mateusz Budnik, Bartosz Krawczyk: On optimal settings of classification tree ensembles for medical decision support. *Health Informatics Journal* 19(1): 3-15 (2013)

59. Konrad Jackowski, Bartosz Krawczyk, Michal Wozniak: Application of Adaptive Splitting and Selection Classifier to the Spam Filtering Problem. *Cybernetics and Systems* 44(6-7): 569-588 (2013)

60. Michal Wozniak, Bartosz Krawczyk: Combined classifier based on feature space partitioning. *Applied Mathematics and Computer Science* 22(4): 855-866 (2012)

CONFERENCE PROCEEDINGS

1. Damien Dablain, Colin Bellinger, Bartosz Krawczyk, Nitesh V. Chawla: Efficient Augmentation for Imbalanced Deep Learning. *ICDE 2023* accepted, in press.

2. Lukasz Korycki, Bartosz Krawczyk: Concept Drift Detection from Multi-Class Imbalanced Data Streams. *ICDE 2021*: 1068-1079

3. Lukasz Korycki, Bartosz Krawczyk: Class-Incremental Experience Replay for Continual Learning under Concept Drift. *CVPR 2021 Workshops*: 3649-3658

4. Filip Guzy, Michal Wozniak, Bartosz Krawczyk: Evaluating and Explaining Generative Adversarial Networks for Continual Learning under Concept Drift. *ICDM 2021 Workshops*: 295-303

5. Lukasz Korycki, Bartosz Krawczyk: Streaming Decision Trees for Lifelong Learning. *ECML/PKDD 2021*: 502-518

6. Lukasz Korycki, Bartosz Krawczyk: Low-Dimensional Representation Learning from Imbalanced Data Streams. *PAKDD 2021*: 629-641

7. Bartosz Krawczyk, Alberto Cano: Locally Linear Support Vector Machines for Imbalanced Data Classification. *PAKDD 2021*: 616-628

8. Bartosz Krawczyk, Colin Bellinger, Roberto Corizzo, Nathalie Japkowicz: Undersampling with Support Vectors for Multi-Class Imbalanced Data Classification. *IJCNN 2021*: 1-7

9. Lukasz Korycki, Bartosz Krawczyk: Online Oversampling for Sparsely Labeled Imbalanced and Non-Stationary Data Streams. *IJCNN 2020*: 1-8

10. Bartosz Krawczyk, Alberto Cano: Adaptive Ensemble Active Learning for Drifting Data Stream Mining. *IJCAI* 2019: 2763-2771

11. Lukasz Korycki, Bartosz Krawczyk: Unsupervised Drift Detector Ensembles for Data Stream Mining. *DSAA 2019*: 317-325

12. Lukasz Korycki, Alberto Cano, Bartosz Krawczyk: Active Learning with Abstaining Classifiers for Imbalanced Drifting Data Streams. *IEEE BigData 2019*: 2334-2343

13. William C. Sleeman IV, Bartosz Krawczyk: Bagging Using Instance-Level Difficulty for Multi-Class Imbalanced Big Data Classification on Spark. *IEEE BigData 2019*: 2484-2493

14. Bartosz Krawczyk, Michal Wozniak: On the Role of Cost-Sensitive Learning in Imbalanced Data Oversampling. *ICCS* 2019: 180-191

15. Shiven Sharma, Colin Bellinger, Bartosz Krawczyk, Osmar R. Zaïane, Nathalie Japkowicz: Synthetic Oversampling with the Majority Class: A New Perspective on Handling Extreme Imbalance. *ICDM 2018*: 447-456

16. Lukasz Korycki, Bartosz Krawczyk: Clustering-Driven and Dynamically Diversified Ensemble for Drifting Data Streams. *IEEE BigData 2018*: 1037-1044

17. Bartosz Krawczyk, Bernhard Pfahringer, Michal Wozniak: Combining active learning with concept drift detection for data stream mining. *IEEE BigData 2018*: 2239-2244

18. Andriy Mulyar, Bartosz Krawczyk: Addressing Local Class Imbalance in Balanced Datasets with Dynamic Impurity Decision Trees. *Discovery Sciences* 2018: 3-17

19. Bartosz Krawczyk, Alberto Cano, Michal Wozniak: Selecting local ensembles for multi-class imbalanced data classification. *IJCNN 2018*: 1-8

20. Alberto Cano, Bartosz Krawczyk: Learning Classification Rules with Differential Evolution for High-Speed Data Stream Mining on GPU s. *CEC 2018*: 1-8

21. Andrzej Lapinski, Bartosz Krawczyk, Pawel Ksicnicwicz, Michal Wozniak: An Empirical Insight Into Concept Drift Detectors Ensemble Strategies. *CEC 2018*: 1-8

22. Bartosz Krawczyk, Michal Wozniak: Leveraging Ensemble Pruning for Imbalanced Data Classification. *SMC 2018*: 439-444

23. José A. Sáez, Héctor Quintián, Bartosz Krawczyk, Michal Wozniak, Emilio Corchado: Multi-class Imbalanced Data Oversampling for Vertebral Pathologies Classification. *HAIS 2018*: 131-143

24. Bartosz Krawczyk, Przemyslaw Skryjomski: Cost-Sensitive Perceptron Decision Trees for Imbalanced Drifting Data Streams. *ECML/PKDD 2017*: 512-527

25. Przemyslaw Skryjomski, Bartosz Krawczyk: Influence of minority class instance types on SMOTE imbalanced data oversampling. *LIDTA@PKDD/ECML 2017*: 7-21

26. Lukasz Korycki, Bartosz Krawczyk: Combining Active Learning and Self-Labeling for Data Stream Mining. *CORES 2017*: 481-490

27. Bartosz Krawczyk, Michal Wozniak: Online query by committee for active learning from drifting data streams. *IJCNN 2017*: 2120-2127

28. Bartosz Krawczyk, Bridget T. McInnes, Alberto Cano: Sentiment Classification from Multi-class Imbalanced Twitter Data Using Binarization. *HAIS 2017*: 26-37

29. Michal Koziarski, Bartosz Krawczyk, Michal Wozniak: Radial-Based Approach to Imbalanced Data Oversampling. *HAIS 2017*: 318-327

30. Bartosz Krawczyk: Cost-sensitive one-vs-one ensemble for multi-class imbalanced data. *IJCNN 2016*: 2447-2452

31. Bartosz Krawczyk, José A. Sáez, Michal Wozniak: Tackling label noise with multi-class decomposition using fuzzy one-class support vector machines. *FUZZ-IEEE 2016*: 915-922

32. Bartosz Krawczyk: GPU-Accelerated Extreme Learning Machines for Imbalanced Data Streams with Concept Drift. *ICCS 2016*: 1692-1701

33. Bartosz Krawczyk: Hybrid One-Class Ensemble for High-Dimensional Data Classification. *ACIIDS 2016*: 136-144

34. Pawel Ksieniewicz, Bartosz Krawczyk, Michal Wozniak: Ensemble of One-Dimensional Classifiers for Hyperspectral Image Analysis. *DMBD 2016*: 513-520

35. Michal Koziarski, Bartosz Krawczyk, Michal Wozniak: Forming Classifier Ensembles with Deterministic Feature Subspaces. *FedCSIS 2016*: 89-95

36. Bartosz Krawczyk, Michal Wozniak: Incremental One-Class Bagging for Streaming and Evolving Big Data. *IEEE BigDataSE 2015*: 193-198

37. Bartosz Krawczyk, Michal Wozniak: Weighted Naïve Bayes Classifier with Forgetting for Drifting Data Streams. *SMC 2015*: 2147-2152

38. Bartosz Krawczyk, Michal Wozniak: Wagging for Combining Weighted One-class Support Vector Machines. *ICCS 2015*: 1565-1573

39. Bartosz Krawczyk, Michal Wozniak: Cost-Sensitive Neural Network with ROC-Based Moving Threshold for Imbalanced Classification. *IDEAL 2015*: 45-52

40. Bartosz Krawczyk, Michal Wozniak: Reacting to different types of concept drift with adaptive and incremental one-class classifiers. *CYBCONF 2015*: 30-35

41. Bartosz Krawczyk, Michal Wozniak: Combining nearest neighbour classifiers based on small subsamples for big data analytics. *CYBCONF 2015*: 311-316

42. Bartosz Krawczyk: Combining One-vs-One Decomposition and Ensemble Learning for Multi-class Imbalanced Data. *CORES 2015*: 27-36

43. Bartosz Krawczyk, Michal Wozniak: Pruning Ensembles of One-Class Classifiers with X-means Clustering. *ACIIDS 2015*: 484-493

44. Bartosz Krawczyk, Michal Wozniak: Pruning Ensembles with Cost Constraints. *ACIIDS 2015*: 503-512

45. Boguslaw Cyganek, Bartosz Krawczyk: Data Classification with Ensembles of One-Class Support Vector Machines and Sparse Nonnegative Matrix Factorization. *ACIIDS 2015*: 526-535

46. Bartosz Krawczyk, Gerald Schaefer: Effective Imbalanced Classification of Breast Thermogram Features. *PReMI 2015*: 535-544

47. Bartosz Krawczyk, Michal Wozniak, Boguslaw Cyganek: Weighted One-Class Classifier Ensemble Based on Fuzzy Feature Space Partitioning. *ICPR 2014*: 2838-2843

48. Bartosz Krawczyk, Michal Wozniak: New untrained aggregation methods for classifier combination. *IJCNN 2014*: 617-622

49. Bartosz Krawczyk, Michal Wozniak: Untrained Method for Ensemble Pruning and Weighted Combination. *ISNN 2014*: 358-365

50. Bartosz Krawczyk, Michal Wozniak: One-Class Classification Ensemble with Dynamic Classifier Selection. *ISNN 2014*: 542-549

51. Bartosz Krawczyk, Michal Wozniak: Optimization Algorithms for One-Class Classification Ensemble Pruning. *ACIIDS 2014*: 127-136

52. Gerald Schaefer, Bartosz Krawczyk, M. Emre Celebi, Hitoshi Iyatomi, Aboul Ella Hassanien: Melanoma Classification Based on Ensemble Classification of Dermoscopy Image Features. *AMLTA 2014*: 291-298

53. Gerald Schaefer, Bartosz Krawczyk, Niraj P. Doshi, Tomoharu Nakashima: Cost-sensitive texture classification. *IEEE Congress on Evolutionary Computation 2014*: 105-108

54. Bartosz Krawczyk, Isaac Triguero, Salvador García, Michal Wozniak, Francisco Herrera: A first attempt on evolutionary prototype reduction for nearest neighbor one-class classification. *IEEE Congress on Evolutionary Computation 2014*: 747-753

55. Bartosz Krawczyk, Lukasz Jelen, Michal Wozniak: Adaptive Splitting and Selection ensemble for breast cancer malignancy grading. *CICARE 2014*: 104-111

56. Bartosz Krawczyk, Michal Wozniak, Francisco Herrera: Weighted one-class classification for different types of minority class examples in imbalanced data. *CIDM 2014*: 337-344

57. Bartosz Krawczyk, Michal Wozniak: Experiments on simultaneous combination rule training and ensemble pruning algorithm. *CIEL 2014*: 1-6

58. Pedro Villar, Bartosz Krawczyk, Ana M. Sánchez, Rosana Montes, Francisco Herrera: Designing a compact Genetic fuzzy rule-based system for one-class classification. *FUZZ-IEEE 2014*: 2163-2170

59. Bartosz Krawczyk, Pawel Ksieniewicz, Michal Wozniak: Hyperspectral Image Analysis Based on Color Channels and Ensemble Classifier. *HAIS 2014*: 274-284

60. Bartosz Krawczyk, Michal Wozniak, Boguslaw Cyganek: Clustering-Based Ensemble of One-Class Classifiers for Hyperspectral Image Segmentation. *HAIS 2014*: 678-688

61. Bartosz Krawczyk, Lukasz Jelen, Adam Krzyzak, Thomas Fevens: One-Class Classification Decomposition for Imbalanced Classification of Breast Cancer Malignancy Data. *ICAISC 2014*: 539-550

62. Bartosz Krawczyk, Michal Wozniak, Boguslaw Cyganek: Weighted One-Class Classifier Ensemble Based on Fuzzy Feature Space Partitioning. *ICPR 2014*: 2838-2843

63. Bartosz Krawczyk, Michal Wozniak: Hypertension Type Classification Using Hierarchical Ensemble of One-Class Classifiers for Imbalanced Data. *ICT Innovations 2014*: 341-349

64. Bartosz Krawczyk, Michal Wozniak: Handling Label Noise in Microarray Classification with One-Class Classifier Ensemble. *ICT Innovations 2014*: 351-359

65. Bartosz Krawczyk, Pawel Ksieniewicz, Michal Wozniak: Hyperspectral Image Analysis Based on Quad Tree Decomposition. *SOCO-CISIS-ICEUTE 2014*: 105-113

66. Bartosz Krawczyk, Michal Wozniak: Evolutionary Cost-Sensitive Ensemble for Malware Detection. *SOCO-CISIS-ICEUTE 2014*: 433-442

67. Bartosz Krawczyk, Michal Wozniak, Tomasz Orczyk, Piotr Porwik: Adaptive Splitting and Selection Method for Noninvasive Recognition of Liver Fibrosis Stage. *ACIIDS 2013*: 215-224

68. Bartosz Krawczyk, Gerald Schaefer: An Analysis of Properties of Malignant Cases for Imbalanced Breast Thermogram Feature Classification. *ACPR 2013*: 305-309

69. Gerald Schaefer, Bartosz Krawczyk, M. Emre Celebi, Hitoshi Iyatomi: Melanoma Classification Using Dermoscopy Imaging and Ensemble Learning. *ACPR 2013*: 386-390

70. Gerald Schaefer, Niraj P. Doshi, Bartosz Krawczyk: HEp-2 Cell Classification Using Multi-dimensional Local Binary Patterns and Ensemble Classification. *ACPR 2013*: 951-955

71. Bartosz Krawczyk, Gerald Schaefer, Shao Ying Zhu: Breast Cancer Identification Based on Thermal Analysis and a Clustering and Selection Classification Ensemble. *Brain and Health Informatics 2013*: 256-265

72. Bartosz Krawczyk, Michal Wozniak: Accuracy and diversity in classifier selection for one-class classification ensembles. *CIEL 2013*: 46-51

73. Bartosz Krawczyk, Michal Wozniak: On diversity measures for fuzzy one-class classifier ensembles. *CIEL 2013*: 60-65

74. Bartosz Krawczyk, Gerald Schaefer, Michal Wozniak: Combining one-class classifiers for imbalanced classification of breast thermogram features. *CIMI 2013*: 36-41

75. Bartosz Krawczyk, Michal Wozniak: Incremental Learning and Forgetting in One-Class Classifiers for Data Streams. *CORES 2013*: 319-328

76. Bartosz Krawczyk, Michal Wozniak, Tomasz Orczyk, Piotr Porwik: Cost Sensitive Hierarchical Classifiers for Noninvasive Recognition of Liver Fibrosis Stage. *CORES 2013*: 639-647

77. Gerald Schaefer, Bartosz Krawczyk, Niraj P. Doshi, Arcangelo Merla: Scleroderma capillary pattern identification using texture descriptors and ensemble classification. *EMBC 2013*: 5473-5476

78. Bartosz Krawczyk, Gerald Schaefer: A pruned ensemble classifier for effective breast thermogram analysis. *EMBC 2013*: 7120-7123

79. Bartosz Krawczyk: Combining One-Class Support Vector Machines for Microarray Classification. *FedCSIS 2013*: 83-89

80. Bartosz Krawczyk, Michal Wozniak: Distributed Privacy-Preserving Minimal Distance Classification. *HAIS 2013*: 462-471

81. Bartosz Krawczyk, Michal Wozniak: Pruning One-Class Classifier Ensembles by Combining Sphere Intersection and Consistency Measures. *ICAISC 2013*: 426-436

82. Gerald Schaefer, Bartosz Krawczyk, Niraj P. Doshi: Improved LBP texture classification using ensemble learning. *ICME 2013*: 1-6

83. Bartosz Krawczyk, Gerald Schaefer: An improved ensemble approach for imbalanced classification problems. *SACI 2013*: 423-426

84. Bartosz Krawczyk, Gerald Schaefer, Michal Wozniak: A cost-sensitive ensemble classifier for breast cancer classification. *SACI 2013*: 427-430

85. Bartosz Krawczyk, Gerald Schaefer: Effective multiple classifier systems for breast thermogram analysis. *ICPR 2012*: 3345-3348

86. Bartosz Krawczyk: Diversity in Ensembles for One-Class Classification. *ADBIS Workshops 2012*: 119-129

87. Bartosz Krawczyk, Gerald Schaefer, Michal Wozniak: Breast thermogram analysis using a cost-sensitive multiple classifier system. *BHI 2012*: 507-510

88. Bartosz Krawczyk, Michal Wozniak: Experiments on distance measures for combining one-class classifiers. *FedCSIS 2012*: 89-92

89. Bartosz Krawczyk, Michal Wozniak: Combining Diverse One-Class Classifiers. *HAIS 2012*: 590-601

90. Bartosz Krawczyk, Pawel Filipczuk, Michal Wozniak: Adaptive Splitting and Selection Algorithm for Classification of Breast Cytology Images. *ICCCI 2012*: 475-484

91. Bartosz Krawczyk, Lukasz Jelen, Adam Krzyzak, Thomas Fevens: Oversampling Methods for Classification of Imbalanced Breast Cancer Malignancy Data. *ICCVG 2012*: 483-490

92. Konrad Jackowski, Bartosz Krawczyk, Michal Wozniak: Cost-Sensitive Splitting and Selection Method for Medical Decision Support System. *IDEAL 2012*: 850-857

93. Bartosz Krawczyk, Michal Wozniak: Analysis of Diversity Assurance Methods for Combined Classifiers. *IP&C 2012*: 179-186

94. Marcin Zmyslony, Bartosz Krawczyk, Michal Wozniak: Combined Classifiers with Neural Fuser for Spam Detection. *CISIS/ICEUTE/SOCO 2012*: 245-252

95. Bartosz Krawczyk, Michal Wozniak: Designing Cost-Sensitive Ensemble - Genetic Approach. *IP&C 2011*: 227-234

96. Bartosz Krawczyk, Michal Wozniak: Privacy Preserving Models of k-NN Algorithm. *CORES 2011*: 207-217