

# Weiwei Cheng

## Curriculum Vitae

roywwcheng@gmail.com

www.chengweiwei.com

### WORK EXPERIENCE

- 2007 – now      **Researcher**  
Machine learning research funded by German Research Foundation and Hessian  
Ministry of Science and the Arts  
Knowledge Engineering and Bioinformatics Lab  
Faculty of Mathematics and Computer Science  
Philipps University Marburg, Germany
- 2011 – 2012      **Student consultant**  
Consulting service for Asian students  
Faculty of Mathematics and Computer Science  
Philipps University Marburg, Germany
- 2010              **Research intern**  
Improving machine learning with large-scale ontological knowledge  
Machine Learning and Perception Group  
Microsoft Research Cambridge, United Kingdom
- 2009              **Data mining consulting intern**  
Analyzing and mining IT-related audit issues  
Group Technology and Operations  
Deutsche Bank  
Eschborn, Germany
- 2006 – 2007      **Research assistant**  
Efficient preference operators in very large database systems  
Faculty of Computer Science  
Otto-von-Guericke University Magdeburg, Germany
- 2003              **Software development intern**  
Geographic information system for electricity distribution management  
Xinli Software Co. Ltd.  
Hefei, China

### EDUCATION

- 2007 – now      **PhD candidate in Computer Science**  
Research interests: machine learning, data mining, preference learning, ranking,  
multi-label classification  
Faculty of Mathematics and Computer Science  
Philipps University Marburg, Germany
- 2005 – 2007      **Master's degree in Computer Science**  
Subject: Data and Knowledge Engineering  
GPA: 4.0/4.0 *with highest distinction + best graduate award*  
Master's thesis: Interactive ranking of skylines using machine learning techniques  
Otto-von-Guericke University Magdeburg, Germany

2000 – 2004    **Bachelor's degrees in Computer Science and Business Administration**  
Bachelor's thesis of CS: Database systems for personnel management  
Bachelor's thesis of BA: Retail analysis and development in Zhengzhou  
Zhengzhou University, China

## PUBLICATIONS

- Dec. 2011    Krzysztof Dembczyński, Willem Waegeman, Weiwei Cheng, Eyke Hüllermeier  
**An exact algorithm for F-measure maximization**  
Advances in Neural Information Processing Systems 24 (NIPS-11): 223-230, Curran Associates  
Granada, Spain *NIPS travel grant*
- Dec. 2011    Weiwei Cheng, Eyke Hüllermeier  
**Label ranking with abstention: predicting partial orders by thresholding probability distributions**  
Workshop Proceedings of Choice Models and Preference Learning (CMPL-11): arXiv:1112.0508v1 [cs.AI]  
The 25<sup>th</sup> Annual Conference on Neural Information Processing Systems (NIPS-11) Sierra Nevada, Spain *NIPS travel grant*
- Dec. 2011    Thomas Fober, Weiwei Cheng, Eyke Hüllermeier  
**Focusing search in multiobjective evolutionary optimization through preference learning from user feedback**  
Proceedings of the 21<sup>st</sup> Workshop Computational Intelligence (WCI-11): 107-117, KIT Scientific Publishing  
Dortmund, Germany
- Oct. 2011    Weiwei Cheng, Gjergji Kasneci, Thore Graepel, David Stern, Ralf Herbrich  
**Automated feature generation from structured knowledge**  
Proceedings of the 20<sup>th</sup> ACM Conference on Information and Knowledge Management (CIKM-11): 1395-1404, ACM  
Glasgow, UK
- Sep. 2011    Ali Fallah Tehrani, Weiwei Cheng, Krzysztof Dembczyński, Eyke Hüllermeier  
**Learning monotone nonlinear models using the Choquet integral**  
LNAI 6913 Machine Learning and Knowledge Discovery in Databases: 414-429, Springer  
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-11)  
Athens, Greece *invited to Machine Learning Journal Special Issue*
- Sep. 2011    Weiwei Cheng, Johannes Fürnkranz, Eyke Hüllermeier, Sang-Hyeun Park  
**Preference-based policy iteration: leveraging preference learning for reinforcement learning**  
LNAI 6911 Machine Learning and Knowledge Discovery in Databases: 312-327, Springer  
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-11)  
Athens, Greece *invited to Machine Learning Journal Special Issue*
- Jul. 2011    Ali Fallah Tehrani, Weiwei Cheng, Eyke Hüllermeier  
**Choquistic regression: generalizing logistic regression using the Choquet integral**  
Proceedings of the 7<sup>th</sup> Conference of the European Society for Fuzzy Logic and Technology (EUSFLAT-2011): 868-875, Atlantis Press  
Aix-les-Bains, France *nominated for best student paper award*

- Dec. 2010 Ali Fallah Tehrani, Weiwei Cheng, Eyke Hüllermeier  
**Preference learning using the Choquet integral: the case of multipartite ranking**  
 Proceedings of the 20<sup>th</sup> Workshop Computational Intelligence (WCI-10): 119-130,  
 KIT Scientific Publishing  
 Dortmund, Germany
- Sep. 2010 Weiwei Cheng, Michaël Rademaker, Bernard De Baets, Eyke Hüllermeier  
**Predicting partial orders: ranking with abstention**  
 LNAI 6321 Machine Learning and Knowledge Discovery in Databases: 215-230,  
 Springer  
 European Conference on Machine Learning and Principles and Practice of  
 Knowledge Discovery in Databases (ECMLPKDD-10)  
 Barcelona, Spain *UNESCO ECMLPKDD conference grant*
- Sep. 2010 Krzysztof Dembczyński, Willem Waegeman, Weiwei Cheng, Eyke Hüllermeier  
**Regret analysis for performance metrics in multi-label classification: the case of Hamming and subset zero-one loss**  
 LNAI 6321 Machine Learning and Knowledge Discovery in Databases: 280-295,  
 Springer  
 European Conference on Machine Learning and Principles and Practice of  
 Knowledge Discovery in Databases (ECMLPKDD-10)  
 Barcelona, Spain *UNESCO ECMLPKDD conference grant*
- Jun. 2010 Krzysztof Dembczyński, Willem Waegeman, Weiwei Cheng, Eyke Hüllermeier  
**On label dependence in multi-label classification**  
 Workshop Proceedings of Learning from Multi-Label Data 2010 (MLD-10): 5-12  
 The 27<sup>th</sup> International Conference on Machine Learning (ICML-10)  
 Haifa, Israel *invited paper*
- Jun. 2010 Weiwei Cheng, Krzysztof Dembczyński, Eyke Hüllermeier  
**Label ranking methods based on the Plackett-Luce model**  
 Proceedings of the 27<sup>th</sup> International Conference on Machine Learning (ICML-10):  
 215-222, Omnipress  
 Haifa, Israel *ICML scholarship*
- Jun. 2010 Weiwei Cheng, Krzysztof Dembczyński, Eyke Hüllermeier  
**Graded multi-label classification: the ordinal case**  
 Proceedings of the 27<sup>th</sup> International Conference on Machine Learning (ICML-10):  
 223-230, Omnipress  
 Haifa, Israel *ICML scholarship*
- Jun. 2010 Krzysztof Dembczyński, Weiwei Cheng, Eyke Hüllermeier  
**Bayes optimal multi-label classification via probabilistic classifier chains**  
 Proceedings of the 27<sup>th</sup> International Conference on Machine Learning (ICML-10):  
 279-286, Omnipress  
 Haifa, Israel *ICML scholarship*
- Sep. 2009 Weiwei Cheng, Eyke Hüllermeier  
**Label ranking with partial abstention using ensemble learning**  
 Workshop Proceedings of Preference Learning 2009 (PL-09): 17-23  
 European Conference on Machine Learning and Principles and Practice of  
 Knowledge Discovery in Databases (ECMLPKDD-09)  
 Bled, Slovenia
- Sep. 2009 Weiwei Cheng, Eyke Hüllermeier  
**A simple instance-based approach to multi-label classification using the Mallows model**  
 Workshop Proceedings of Learning from Multi-Label Data 2009 (MLD-09): 28-38  
 European Conference on Machine Learning and Principles and Practice of  
 Knowledge Discovery in Databases (ECMLPKDD-09)

Bled, Slovenia

- Sep. 2009      Weiwei Cheng, Eyke Hüllermeier  
**Combining instance-based learning and logistic regression for multi-label classification**  
Machine Learning 76: 211-225, Springer  
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-09)  
Bled, Slovenia *Machine Learning Journal Best Student Paper Award*
- Jun. 2009      Weiwei Cheng, Jens Hühn, Eyke Hüllermeier  
**Decision tree and instance-based learning for label ranking**  
Proceedings of the 26<sup>th</sup> International Conference on Machine Learning (ICML-09): 161-168, Omnipress  
Montreal, Canada *ICML scholarship*
- May 2009      Weiwei Cheng, Eyke Hüllermeier  
**A new instance-based label ranking approach using the Mallows model**  
LNCS 5551 Advances in Neural Networks: 707-716, Springer  
The 6<sup>th</sup> International Symposium on Neural Networks (ISNN-09)  
Wuhan, China
- Oct. 2008      Weiwei Cheng, Eyke Hüllermeier  
**Ranking skylines using active learning techniques**  
Proceedings of Chinese Intelligent Systems Engineering 2008 (CNISE-08)  
Chengdu, China
- Sep. 2008      Weiwei Cheng, Eyke Hüllermeier  
**Instance-based label ranking using the Mallows model**  
Workshop Proceedings of Preference Learning 2008 (PL-08)  
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-08)  
Antwerp, Belgium
- Sep. 2008      Weiwei Cheng, Eyke Hüllermeier  
**Instance-based label ranking using the Mallows model**  
Workshop Proceedings of ECCBR-08: 143-157  
Uncertainty and Knowledge Discovery in CBR  
The 9<sup>th</sup> European Conference on Case-Based Reasoning (ECCBR-08)  
Trier, Germany
- Sep. 2008      Weiwei Cheng, Eyke Hüllermeier  
**Learning similarity functions from qualitative feedback**  
LNAI 5239 Advances in Case-Based Reasoning: 120-134, Springer  
The 9<sup>th</sup> European Conference on Case-Based Reasoning (ECCBR-08)  
Trier, Germany *nominated for best paper award*
- Aug. 2008      Eyke Hüllermeier, Johannes Fürnkranz, Weiwei Cheng, Klaus Brinker  
**Label ranking by learning pairwise preferences**  
Artificial Intelligence 172: 1897-1916, Elsevier *listed in Most Cited Artificial Intelligence Articles 2007-2012*
- Oct. 2007      Weiwei Cheng  
**Interactive ranking of skylines using machine learning techniques**  
Master's thesis *summa cum laude*  
Faculty of Computer Science, Otto-von-Guericke University Magdeburg  
Magdeburg, Germany
- Sep. 2007      Weiwei Cheng, Eyke Hüllermeier, Bernhard Seeger, Ilya Vladimirovich  
**Interactive ranking of skylines using machine learning techniques**

Proceedings of Lernen-Wissen-Adaptivität 2007 (LWA-07): 141-148, Martin Luther University  
Halle, Germany

## TALKS & TUTORIALS

- Jul. 2012      **Preference-based reinforcement learning**  
The 25<sup>th</sup> European Conference on Operational Research (EURO-2012)  
Vilnius, Lithuania *DAAD conference scholarship*
- Sep. 2011      **Learning monotone nonlinear models using the Choquet integral**  
Lernen-Wissen-Adaptivität (LWA-11)  
Magdeburg, Germany
- Dec. 2010      **The RipOff! game: a tutorial of cooperative game theory**  
with Yoram Bachrach  
Think Computer Science  
Cambridge, UK
- Sep. 2010      **Graded multi-label classification: the ordinal case**  
Lernen-Wissen-Adaptivität (LWA-10)  
Kassel, Germany
- Jun. 2010      **Acceptance speech of 2009 Chinese Government Award for Outstanding Self-Financed Students Abroad**  
Embassy of China, Berlin, Germany
- Nov. 2009      **Text classification: concepts and methods**  
Association of Chinese Computer Scientists in Germany (GCI) Annual Conference  
Fürth, Germany
- Nov. 2009      **Text classification: a back-to-school tutorial**  
GTO IES Audit & Risk Management Department, Deutsche Bank  
Frankfurt, Germany
- Oct. 2009      **Human vs. computer: case studies**  
Association of Chinese Scholars and Students in Magdeburg (VCWSM e.V.)  
Magdeburg, Germany
- Oct. 2009      **Multi-label classification: a new machine learning problem**  
Lightning Talk, the 4<sup>th</sup> Annual Google Test Automation Conference (GTAC-09)  
Zurich, Switzerland
- Sep. 2009      **Combining instance-based learning and logistic regression for multi-label classification**  
Lernen-Wissen-Adaptivität (LWA-09)  
Darmstadt, Germany
- Sep. 2009      **Human-computation in Internet**  
Association of Chinese Computer Scientists in Germany (GCI) IT Strategy Workshop  
Schwetzingen, Germany
- Nov. 2008      **Ranking the skyline: an application of preference learning**  
Association of Chinese Computer Scientists in Germany (GCI) Annual Conference  
Lahnstein, Germany
- Sep. 2008      **Instance-based label ranking**  
Student Talk, the 10<sup>th</sup> Machine Learning Summer School (MLSS-08)  
Ile De Re, France *MLSS scholarship*

Mar. 2007      **A brief introduction to preference handling**  
Colloquium for Graduate Students in Mathematics and Computer Science  
Philipps University Marburg, Germany

## **PROFESSIONAL ACTIVITIES**

### **Membership**

Association for Computing Machinery (ACM)  
Association of Chinese Computer Scientists in Germany (GCI)  
Institute of Electrical and Electronics Engineers (IEEE)  
International Machine Learning Society (IMLS)

### **Journal reviewer**

Neural Processing Letters (Springer)  
Artificial Intelligence (Elsevier)  
Engineering Applications of Artificial Intelligence (Elsevier)  
IEEE Transactions on Fuzzy Systems (IEEE)  
Information Retrieval (Springer)  
Journal of Algorithms (Elsevier)  
Journal of Artificial Intelligence Research (AAAI Press)  
Journal of Machine Learning Research (Microtome Publishing)  
Machine Learning (Springer)  
Pattern Recognition (Elsevier)  
Soft Computing (Springer)  
Uncertainty, Fuzziness and Knowledge-Based Systems (World Scientific)

### **Program committee membership**

Feb. 2012      Knowledge Discovery and Data Mining Meets Linked Open Data workshop at the 9<sup>th</sup>  
Extended Semantic Web Conference (ESWC-12)

Jan. 2012      European Conference on Machine Learning and Principles and Practice of  
Knowledge Discovery in Databases (ECMLPKDD-12)

Jan. 2012      The 20<sup>th</sup> European Conference on Artificial Intelligence (ECAI-2012)

Mar. 2011      European Conference on Machine Learning and Principles and Practice of  
Knowledge Discovery in Databases (ECMLPKDD-11)

Sep. 2009      Preference Learning workshop at European Conference on Machine Learning and  
Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-09)

Jul. 2009      International Fuzzy Systems Association World Congress and European Society for  
Fuzzy Logic and Technology Conference (IFSA/EUSFLAT-09)

Sep. 2008      Preference Learning workshop at European Conference on Machine Learning and  
Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-08)

### **Conference reviewer**

Mar. 2012      The 29<sup>th</sup> International Conference on Machine Learning (ICML-12)

Feb. 2012      The 14<sup>th</sup> International Conference on Information Processing and Management of  
Uncertainty in Knowledge-Based Systems (IPMU-12)

Nov. 2011      2012 SIAM International Conference on Data Mining (SDM-12)

Nov. 2011	The 16 <sup>th</sup> Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-12)
Jun. 2011	The 20 <sup>th</sup> ACM Conference on Information and Knowledge Management (CIKM-11)
May 2011	The 5 <sup>th</sup> International Conference on Scalable Uncertainty Management (SUM-11)
Mar. 2011	The 11 <sup>th</sup> European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU-11)
Jul. 2010	2010 IEEE International Conference on Data Mining (IEEEICDM-10)
Jul. 2010	The 19 <sup>th</sup> ACM International Conference on Information and Knowledge Management (CIKM-10)
May 2010	The 11 <sup>th</sup> International Conference on Parallel Problem Solving from Nature (PPSN-10)
Mar. 2010	The 10 <sup>th</sup> Industrial Conference on Data Mining (ICDM-10)
Mar. 2010	The 36 <sup>th</sup> Annual Convention of the Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB-10)
Feb. 2010	The 27 <sup>th</sup> International Conference on Machine Learning (ICML-10)
Aug. 2009	The 26 <sup>th</sup> IEEE International Conference on Data Engineering (ICDE-10)
Jul. 2009	2009 IEEE International Conference on Data Mining (IEEEICDM-09)
Jun. 2009	The 32 <sup>nd</sup> Annual Conference on Artificial Intelligence (KI-09)
May 2009	European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECMLPKDD-09)
Apr. 2009	The 8 <sup>th</sup> International Symposium on Intelligent Data Analysis (IDA-09)
Nov. 2008	2009 IEEE Symposium on Computational Intelligence and Data Mining (CIDM-09)
Jul. 2008	Advances in Data Analysis, Data Handling and Business Intelligence – 32 <sup>nd</sup> Annual Conference of the German Classification Society, Joint Conference with the British Classification Society and the Dutch/Flemish Classification Society (GfKI-08)
May 2008	The 34 <sup>th</sup> International Conference on Very Large Data Bases (VLDB-08)

## TEACHING EXPERIENCE

2008 – 2010     Machine Learning

## HONORS & AWARDS

### Awards

- |           |   |
|-----------|---|
| Apr. 2012 | <b>Data mining competition award</b><br>The 2 <sup>nd</sup> place at JRS 2012 Data Mining Competition<br>Chengdu, China   |
| Jul. 2011 | <b>Nomination for best student paper award</b><br>The 7 <sup>th</sup> Conference of the European Society for Fuzzy Logic and Technology,<br>Aix-les-Bains, France |

- Jun. 2010      **Outstanding Chinese student award**  
Chinese Government Award for Outstanding Self-Financed Students Abroad  
Ministry of Education, China
- Sep. 2009      **Best paper award**  
Machine Learning Journal Best Student Paper Award  
The 19<sup>th</sup> European Conference on Machine Learning, Bled, Slovenia
- Oct. 2008      **Best graduate award**  
Best Graduate 2007/2008 in Master of Data and Knowledge Engineering  
Otto-von-Guericke University Magdeburg, Germany
- Sep. 2008      **Nomination for best paper award**  
The 9<sup>th</sup> European Conference on Case-Based Reasoning, Trier, Germany
- Jun. 2002      **Best debater award**  
The 1<sup>st</sup> Varsity Debate Tournament of Henan, China
- Aug. 1999      **Speech contest award**  
The 3<sup>rd</sup> prize at Speech Contest "The 50 Years", Anqing, China

### Scholarships & Grants

- Jul. 2012      **DAAD conference scholarship**  
German Academic Exchange Service (DAAD)  
Vilnius, Lithuania, July, 2012
- Dec. 2011      **NIPS travel grant**  
Sponsored by Winton Capital, etc.  
The 25<sup>th</sup> Annual Conference on Neural Information Processing Systems, Granada, Spain
- Apr. 2011      **DAAD STIBET scholarship**  
Sponsored by German Academic Exchange Service (DAAD)  
Marburg University Research Academy (MARA)
- Sep. 2010      **UNESCO ECMLPKDD conference grant**  
Sponsored by UNESCO Chair in Data Privacy  
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Barcelona, Spain
- Jun. 2010      **ICML scholarship**  
Sponsored by IBM, National Science Foundation (NSF), etc.  
The 27<sup>th</sup> International Conference on Machine Learning, Haifa, Israel
- Jun. 2009      **ICML scholarship**  
Sponsored by National Science Foundation (NSF), etc.  
The 26<sup>th</sup> International Conference on Machine Learning, Montreal, Canada
- Sep. 2008      **MLSS scholarship**  
Sponsored by Predict & Control and Lille's Computer Science Laboratory (LIFL)  
The 10<sup>th</sup> Machine Learning Summer School, Ile De Re, France
- Oct. 2006      **Outstanding international student scholarship**  
Ministry of Education and Cultural Affairs of Saxony-Anhalt, Germany

### INTERESTS & SKILLS

Programming      Java, MATLAB, Octave, Python, C#, C, HTML, SQL, SAP's ABAP, etc.

Languages      Chinese, English, German  
Hobbies        Mandarin debate, investing, electronic sports, table tennis, etc.

### **SOME LINKS**

Research      [work.chengweiwei.com](http://work.chengweiwei.com)  
Blog            [blog.chengweiwei.com](http://blog.chengweiwei.com)  
Photos         [photo.chengweiwei.com](http://photo.chengweiwei.com)  
Twitter        [twitter.com/chengweiwei](https://twitter.com/chengweiwei)  
Video lectures [videos.chengweiwei.com](http://videos.chengweiwei.com)