

Ingo Frommholz

PhD (*Dr. rer. nat.*)
Diplom-Informatiker
FBCS, FHEA

Dept. of Computer Science and Technology
University of Bedfordshire
Park Square
Luton LU1 3JU
United Kingdom
✉ ingo.frommholz@beds.ac.uk
🌐 <http://www.frommholz.org/>

Personal Information

Date and Place of Birth	June 29, 1969 in Bochum-Wattenscheid, Germany
Nationality	German
Marital Status	Married

Summary

Being a passionate programmer, researcher, lecturer and computer scientist, I am an expert in search technologies, information retrieval (IR), data science, machine learning, recommender systems, 'big data' and digital libraries. I am experienced in academia as well as in industry and have been working in prestigious international research and commercial projects, in world-leading research groups and as a consultant.

My research interests comprise theoretical and practical aspects of interactive information access and retrieval, search and database technologies, recommender systems, text analysis to tackle online cyberstalking, text classification and clustering, bibliometrics and IR, high-throughput distributed and parallel IR, and digital libraries.

I have got many years of experience as a commercial software developer and in the design and implementation of online information systems, databases and search services.

Education

- 2012 **Postgraduate Certificate in Academic Practice (PgCAP)**, *University of Bedfordshire*, Luton, UK.
60 credit Masters-level programme designed to both support and enhance the engagement of academic staff with their academic responsibilities.
- 2008 **PhD (*Dr. rer. nat.*) in Computer Science**, *University of Duisburg-Essen*, Duisburg, Germany.
Thesis: *A Probabilistic Framework for Information Modelling and Retrieval Based on User Annotations on Digital Objects*. First examiner: Prof. Dr. Norbert Fuhr, 2nd examiner: Prof. Dr. Maristella Agosti. **German highest grade (summa cum laude)**.
- 2007 **Certificate in professional teaching competence in higher education**, *University of Duisburg-Essen*, Duisburg, Germany.
The 200 hours training programme addressed teaching and learning, testing, advising and counselling, evaluating, and innovatively developing study programmes and teaching strategies.
- 2001 **Diploma in Computer Science (Diplom-Informatiker, MSc equivalent)**, *University of Dortmund*, Germany.
Thesis: *Automatic categorisation of Web documents*. Examiner: Prof. Dr. Norbert Fuhr.
Main courses during studies: Operating Systems, Computer Networks and Distributed Systems, Databases, Information Retrieval, Business Informatics. **German highest grade (1.0)**.

Professional Experience

- 08/2012–Present **Senior Lecturer**, *Department of Computer Science and Technology, University of Bedfordshire, Luton, UK.*
- 02/2011–07/2012 **Lecturer**, *Department of Computer Science and Technology, University of Bedfordshire, Luton, UK.*
- 11/2008–01/2011 **Postdoctoral Research Associate**, *Information Retrieval Group, School of Computing Science, University of Glasgow, Glasgow, Scotland.*
- 10/2004–10/2008 **Research Assistant**, *Information Systems Group, Faculty of Engineering Sciences, University of Duisburg-Essen, Duisburg, Germany.*
- 3/2006–4/2006 **Visiting researcher**, *Information Management Systems Research Group, University of Padua, Italy.*
- 3/2001–9/2004 **Research Assistant**, *Fraunhofer Integrated Publication and Information Systems Institute (IPSI), Darmstadt, Germany.*
- 11/1999–2/2001 **Software Developer**, *adesso GmbH, Dortmund, Germany.*
Part time whilst at university.
- 5/1998–10/1999 **Software Developer**, *o.tel.o GmbH, Düsseldorf, Germany.*
Part time whilst at university.
- 8/1994–4/1998 **Software Developer**, *Lion Ges. für Systementwicklung mbH, Bochum, Germany.*
Part time whilst at university.

Research and Consultancy Projects

- 2015 **EduVocation**, *University of Bedfordshire, Luton, UK.*
Teacher recruitment site and information system based on linked open data (UK Innovation Voucher). PI.
- 2013–2015 **Luton Culture World War I project**, *University of Bedfordshire, Luton, UK.*
Digital Museum and Linked Data project on World War I in conjunction with Luton Museum (AHRC grant, PI).
- since 2012 **Executive Search.**
Consultancy project on the design and implementation of a search engine for executives (in collaboration with industry partners). Principle investigator and main software developer.
- 2008–2011 **RENAISSANCE**, *University of Glasgow, Glasgow, UK.*
EPSRC project on retrieval models based on the quantum theory framework. Main task: evaluation and further extension of an interactive retrieval framework inspired by quantum mechanics.
- 2010–2011 **QONTEXT**, *University of Glasgow, Glasgow, UK.*
EU Marie Curie FP7-IRSES project on information retrieval and quantum theory. Contributed to the successful research proposal.
- 2008 **LACOSTIR**, *University of Duisburg-Essen, Duisburg, Germany.*
German Research Foundation project on interactive retrieval. Main tasks: specification of a model for interactive retrieval.
- 2006–2007 **DELOS**, *University of Duisburg-Essen, Duisburg, Germany.*
EU-FP6 Network of Excellence on Digital Libraries. Main task: design and integration of annotation services into the agent-based Daffodil framework.
- 2006 **KIIB**, *University of Duisburg-Essen, Duisburg, Germany.*
EU-EUREGIO project on business processes and email classification, in collaboration with d.velop AG, Gescher, Germany. Main task: knowledge transfer, development of a study on email classification in a helpdesk scenario. Main contributor to the successful research proposal.
- 2004–2006 **CLASSIX**, *University of Duisburg-Essen, Duisburg, Germany.*
German Research Foundation (DFG) project on classification and intelligent search on information in XML. Main task: specification and implementation of an annotation-based retrieval framework for structured documents based on probabilistic logics.

- 2004 **BRICKS**, *Fraunhofer IPSI*, Darmstadt, Germany.
EU-FP6 integrated project on distributed resources for integrated cultural knowledge services.
Main task: specification of annotation services.
- 2002–2003 **VIP-ADVISOR**, *Fraunhofer IPSI*, Darmstadt, Germany.
EU-FP5 project (IST-2001-32440) on a virtual advisor for personal insurance and finance risk management. Main task: integration of case-based retrieval services for advisory dialogues.
- 2001–2003 **COLLATE**, *Fraunhofer IPSI*, Darmstadt, Germany.
EU-FP5 project (IST-1999-20882) on the development of a collaboratory for annotation, indexing and retrieval of digitized historical archive material. Main task: design and implementation of context-based retrieval methods based on user annotations, of retrieval Web services and of research prototypes.
- 2001–2003 **SCHOLNET**, *Fraunhofer IPSI*, Darmstadt, Germany.
EU-FP5 project (IST-1999-20664) on a digital library infrastructure for supporting communication and collaboration among networked scholarly communities. Main task: design and implementation of search user interfaces.

Invited Talks and Tutorials

- 2014 and 2015 **Information Retrieval and Foraging Autumn School**, *Katlenburg*, Germany.
Tutorial on information retrieval models.
- 2014 **Information Retrieval and Foraging Autumn School**, *Schloss Dagstuhl*, Germany.
Tutorial on information retrieval models.
- 2012 **Information Retrieval Autumn School**, *Schloss Dagstuhl*, Germany.
Tutorial on quantum probabilities and quantum information access and retrieval.

Research Related and Administrative Activities

Chair and Senior PC Member, Mentoring

- 2016 **ACM/IEEE Joint Conference on Digital Libraries (JCDL 2016)**, *Newark, NJ, USA*.
Publicity Chair.
- 2016 **International Conference on Theory and Practice of Digital Libraries (TPDL 2016)**, *Hannover*, Germany.
Tutorial chair.
- 2015 **IR workshops at Lernen–Wissen–Adaptivität (LWA-WIR)**.
2009–2012 Programme chair of the IR workshops held by the IR Special Interest Group of the German Computing Society (GI) in 2009 (Darmstadt), 2010 (Kassel), 2011 (Magdeburg) and 2012 (Dortmund) and 2015 (Trier).
- 2015 **European Conference on Information Retrieval (ECIR 2015)**, *Vienna*, Austria.
Student mentor.
- 2015 **ACM/IEEE Joint Conference on Digital Libraries (JCDL 2015)**, *Knoxville, Tennessee, USA*.
Senior PC member.
- 2014 **DL2014: ACM/IEEE Joint Conference on Digital Libraries (JCDL 2014) / International Conference on Theory and Practice of Digital Libraries (TPDL2014)**, *London*, UK.
Senior PC member and chair of the best student paper committee. In 2014 JCDL and TPDL were held together as the International Digital Libraries Conference (DL2014).
- 2013 **International Conference on Theory and Practice of Digital Libraries (TPDL 2013)**, *Valletta*, Malta.
Panel chair.
- 2012 **International Conference on Theory and Practice of Digital Libraries (TPDL 2012)**, *Cyprus*.
Member of the metareview committee.

- 2011 **International Symposium on Quantum Interaction (QI 2011)**, *Aberdeen*, Scotland.
Proceedings chair.
- 2010 **European Conference on Research and Advanced Technology for Digital Libraries (ECDL 2010)**, *Glasgow*, Scotland.
Local chair.

Organiser

- 2016 **The Joint Workshop on Bibliometric-enhanced Information Retrieval and Natural Language Processing for Digital Libraries (BIRNDL 2016)**, *New Jersey*, USA.
Co-organiser of the workshop held at JCDL 2016.
- 2016 **3rd International Workshop on Bibliometric-enhanced Information Retrieval (BIR2016)**, *Padua*, Italy.
Co-organiser of the workshop held at ECIR 2016.
- 2015 **2nd International Workshop on Bibliometric-enhanced Information Retrieval (BIR2015)**, *Vienna*, Austria.
Co-organiser of the workshop held at ECIR 2015.
- 2014 – 2016 **Information Retrieval and Foraging Autumn School**, Germany.
Co-organiser of three one week schools on selected information foraging and retrieval topics (2014 and 2016 at Schloß Dagstuhl Germany, 2015 at Castle Katlenburg, Germany)
- 2010 **Interactive Track at the Initiative for the Evaluation of XML Retrieval**.
Co-organiser of the INEX 2010 iTrack.
- 2006 **Heterogeneous Track at the Initiative for the Evaluation of XML Retrieval**.
Co-organiser of the INEX 2006 Heterogeneous Track.

Editorial Board, Managing Editor and Guest Editor

- since 2009 **Datenbank-Spektrum Journal**.
Member of the editorial board of Datenbank-Spektrum, the joint journal of the German special interest groups on databases resp. information retrieval.
- since 2001 **International Journal on Digital Libraries (IJDL)**.
Managing editor and member of the editorial board of IJDL. Main responsibilities include supervising the whole reviewing life cycle of incoming submissions, including editor and reviewer assignments, and editorial activities.
- 2011 **Guest Editor IJDL Focussed Issue on ECDL 2010**.

Programme Committee and Reviewer

- 2004–Present I have been member of the programme committee and reviewer at the following conferences and workshops: ACM SIGIR, ACM CIKM, ACM/IEEE JCDL, ECIR, ECDL/TPDL, ICTIR, IIX, WWW, Russian IR Summer School, Quantum Interaction, TIR, LWA, LSHC, AIRS, CHIIR, HPCS.
- I have been reviewer for several journals like ACM Transactions on Information Systems, Elsevier Information Systems, the Journal of the American Society for Information Science and Technology (JASIST), The Computer Journal and the International Journal on Digital Libraries (Springer).

Administrative Activities

- 2014–2015 **BCS Accreditation**, *University of Bedfordshire*, Luton, UK.
Co-Leading the BCS accreditation application of undergraduate and postgraduate computer science programmes taught at the University of Bedfordshire
- 2013–2014 **Data Science Programme Approval**, *University of Bedfordshire*, Luton, UK.
Responsible for the design and specification of the successfully approved undergraduate BSc (Hons) Data Science programme at the University of Bedfordshire, including the design and specification of a module on Data Engineering and Retrieval

- 2013 – 2015 **Staff Representative**, *University of Bedfordshire, Institute for Research in Applicable Computing (IRAC)*, Luton, UK.
Elected staff representative in the IRAC steering committee
- 2013–2015 **Deputy Head**, *IRAC Centre for Research in Distributed Technologies (CREDIT)*, *University of Bedfordshire*, Luton, UK.
I am deputy head of CREDIT and established a Data Science special interest group within CREDIT

Professional Bodies

- since 2011 **Steering Committee, The Chartered Institute for IT (BCS) Information Retrieval Specialist Group.**
Appointed member of the steering committee and treasurer of the BCS IRSG.
- since 2008 **Steering Committee, German Computing Society Information Retrieval Special Interest Group.**
I am member of the German Computing Society (GI) and elected member of the steering committee of the IR Special Interest Group of the German Computing Society (Fachgruppe Information Retrieval der Gesellschaft für Informatik).
- since 2014 **BCS Fellow (FBCS).**
- since 2016 **ACM Member (ACM SIGIR).**
- since 2012 **Fellow of the Higher Education Academy (FHEA).**

Teaching Experience

Course/Programme Co-ordinator

- since 2014 **BSc (Hons) Data Science**, *University of Bedfordshire*, Luton, UK.
Co-ordinator of the BSc Data Science programme at the Dept. of Computer Science and Technology of the University of Bedfordshire.
- 2011–2014 **BSc (Hons) Information Systems**, *University of Bedfordshire*, Luton, UK.
Co-ordinator of the BSc Information Systems programme at the Dept. of Computer Science and Technology of the University of Bedfordshire.
- 2011–2014 **BSc (Hons) Business Information Systems**, *University of Bedfordshire*, Luton, UK.
Co-ordinator of the BSc Business Information Systems programme at the Dept. of Computer Science and Technology of the University of Bedfordshire (held in conjunction with the UoB Business School).

Module Co-ordinator and Lecturer

- since 2014 **Principles and Practice of Data**, *University of Bedfordshire*, Luton, UK.
Module co-ordinator; responsible for organising laboratory sessions, student assignments and the general assessment of student progress; 1st year BSc (Hons) Data Science undergraduate module.
- since 2013 **Advanced IT Strategies and Paradigms**, *University of Bedfordshire*, Luton, UK.
Module co-ordinator; delivering lectures (since 2011) on information retrieval, XML and ontologies; responsible for organising laboratory sessions, student assignments and the general assessment of student progress; 3rd year undergraduate module.
- since 2011 **Data Modelling and Management**, *University of Bedfordshire*, Luton, UK.
Module co-ordinator; designing and delivering lectures on UML, databases and data modelling; responsible for organising laboratory sessions, student assignments and the general assessment of student progress; postgraduate module. Responsible for delivery of lectures at partner college in Oman.
- since 2014 **Grid Services and Distributed Networking**, *University of Bedfordshire*, Luton, UK.
Designing and delivering lectures on XML, Web Services, Hadoop, grid computing and cloud computing; responsible for organising laboratory sessions, student assignments and the general assessment of student progress; postgraduate module taught at partner college in Oman.

2007 **Information Engineering**, *University of Duisburg-Essen*, Duisburg, Germany.
Module co-ordinator; design and delivery of lectures and tutorials on methods, concepts and systems supporting the information life cycle (creation, management, dissemination and processing), which comprised authoring systems, metadata, databases, information and process modelling, digital preservation, access management, digital libraries and information seeking and retrieval; postgraduate module.

Lecturer

- since 2011 **Distributed and Parallel Computing**, *University of Bedfordshire*, Luton, UK.
Designing and delivering lectures on distributed computing, grid computing and cloud computing; responsible for organising laboratory sessions, student assignments and the general assessment of student progress; postgraduate module.
- since 2011 **Programming and Modelling**, *University of Bedfordshire*, Luton, UK.
Designing and delivering lectures on Java programming; responsible for organising laboratory sessions, student assignments and the general assessment of student progress; 1st year undergraduate module.
- 2010/11 **Distributed Information Management / Information Technology**, *University of Glasgow*, Glasgow, UK.
Delivered and designed lectures on XML; postgraduate and 3rd year undergraduate module.
- 2010/11 **General Readings in Computer Science**, *University of Glasgow*, Glasgow, UK.
Marking students' presentations; postgraduate module.
- 2006–2008 **Modelling Methods in Computer Science**, *University of Duisburg-Essen*, Duisburg, Germany.
Delivered and designed tutorials and occasional lectures; exam marking; undergraduate module.
- 2008 **Information Retrieval**, *University of Duisburg-Essen*, Duisburg, Germany.
Delivered and designed tutorials and lectures; postgraduate module.
- 2008 **Information Mining**, *University of Duisburg-Essen*.
Delivered and designed tutorials and lectures; postgraduate module.

Seminar and Student Project Organiser

- 2010 **Geometry and Information Retrieval**, *Fern-Universität Hagen*, Hagen, Germany.
Postgraduate seminar on geometric and quantum-based information retrieval.
- 2008 **Social Information Retrieval**, *University of Duisburg-Essen*, Duisburg, Germany.
Postgraduate seminar on social information retrieval and Web 2.0.
- 2005 **Researcher's Workbench: Managing, annotating and retrieving documents**, *University of Duisburg-Essen*, Duisburg, Germany.
In this postgraduate project students had to design and implement a tool for managing, annotating and retrieving documents.
- 2002–2004 **The Semantic Web: Intelligent search for structured data collections**, *Darmstadt University of Technology*, Darmstadt, Germany.
Postgraduate seminar on Semantic Web concepts and technologies.
- 2004 **XML Retrieval**, *University of Duisburg-Essen*, Duisburg, Germany.
Postgraduate seminar on XML information retrieval.

Thesis Supervision and Mentoring

- 2011 – 2015 **A Probabilistic Approach for Cluster Based Interactive Information Retrieval**, *University of Bedfordshire*, UK.
Director of studies of the successful PhD thesis of Dr Kamran Abbasi.
- 2011 – 2015 **A Framework for Evaluating e-Government Success**, *University of Bedfordshire*, UK.
2nd supervisor of the successful PhD thesis of Dr Obaid Almalki.
- since 2014 **Information Retrieval and Text Processing to Tackle Cyberstalking (working title)**, *University of Bedfordshire*, UK.
Director of studies of the PhD thesis of MSc Zinnar Ghasem.

- since 2013 **Context-based Recommender System (working title)**, *University of Bedfordshire*, UK.
Director of studies of the PhD thesis of MSc Mustafa Ghulam.
- since 2012 **A Conceptual Framework to Support Cross-cultural User Experience Design for Information Retrieval (working title)**, *University of Bedfordshire*, UK.
Director of Studies of the PhD thesis of MSc Karen Chessum.
- since 2012 **A Novel Linked Data Powered Recommendation System for the Cultural Heritage Domain (working title)**, *University of Bedfordshire*, UK.
2nd supervisor of the PhD thesis of MSc Nick Collis.
- since 2015 **Real-time Twitter event detection (working title)**, *University of Bedfordshire*, UK.
2nd supervisor of the PhD thesis of MSc Waleed Alabbas.
- since 2014 **Information Retrieval in Bioinformatics (working title)**, *University of Bedfordshire*, UK.
2nd supervisor of the PhD thesis of MSc Faris Abomelha.
- 2011-2012 **Balancing Exploration and Exploitation in Learning to Rank Online**, *University of Amsterdam*, The Netherlands.
In the context of the ECIR 2011 student mentoring program I was appointed the mentor of Dr Katja Hofmann's successful PhD thesis.
- 2010-2011 **Cognitive IR models for patent search**, *University of Glasgow*, Glasgow, UK.
I have been assisting in supervising the successful PhD of Dr Erik Graf about human information processing and information retrieval (supervisor: M. Lalmas).
- since 2011 **MSc and BSc project supervision**, *University of Bedfordshire*, Luton, UK.
I have been supervising several MSc and BSc projects on information retrieval and high-throughput computing, personal digital assistants, business information systems, distributed systems and computer networks.
- 2008-2009 **Email-based Expert Search for Helpdesks**, *University of Duisburg-Essen*, Duisburg, Germany.
Diploma (master) thesis of Dipl.-Inform. Evgenia Nikiforova
- 2008-2009 **Annotations in Daffodil**, *University of Duisburg-Essen*, Duisburg, Germany.
Bachelor thesis of BSc Simeon Gerenski.
- 2008 **Multifacet-Classification of Emails in a Helpdesk Scenario**, *University of Duisburg-Essen*, Duisburg, Germany.
Diploma (master) thesis of Dipl.-Inform. Thomas Beckers, now PhD student at the University of Duisburg-Essen.
- 2007 **Sentiment Classification in Discussions**, *University of Duisburg-Essen*, Duisburg, Germany.
Diploma (master) thesis of Dipl.-Inform. Marc Lechtenfeld, now PhD student at the University of Duisburg-Essen.
- 2004 **A dynamic, context-based Retrieval Web Service**, *Darmstadt University of Technology*, Darmstadt, Germany.
Diploma (master) thesis of Dipl.-Inform. Thomas Fritz.
- 2002 **Context-based Retrieval with Discourse Structure Relations**, *Darmstadt University of Technology*, Darmstadt, Germany.
Diploma (master) thesis of Dipl.-Inform. Gaby Lang.

PhD Examiner/Reviewer

- 2015 **External examiner Ph.D Thesis "Co-occurrence Rate Networks – An alternative theory for undirected graphical models" by Zhemin Zhu**, *University of Twente*, Enschede, The Netherlands.
- 2015 **External reviewer Ph.D Thesis "Semantic Models for Question Answering" by Piero Molino**, *Dipartimento di Informatica, Università Degli Studi Di Bari Aldo Moro*, Bari, Italy.

Technical Skills

Platforms	Mac OS X, Linux, Solaris, Windows, MS-DOS, AIX, AmigaOS	Programming Languages	Java, Perl, PHP, Python, R, C, Unix Shell (Bash, sh), Prolog, SQL, PL/SQL, Scheme, Modula 2, Assembler (M6510 (C64), MC68000 (Amiga)), Basic
Databases	MySQL, Oracle, Informix	Markup	HTML, XML, XML schema, RDF(S), OWL
Information Retrieval	MG4J, HySpirit, probabilistic Datalog, Solr/Lucene, Terrier, FAST	Tools	Hadoop, J2EE, Eclipse, Jetty, Apache Tomcat, Apache Web server, Oracle Forms, Cyrus IMAP server, L ^A T _E X, CVS, SVN, GIT, Maven, Protégé, Microsoft Office, Open Office, Inkscape

Own Software Projects

POLAR	Prototype of an object-oriented logic-based probabilistic framework for annotation-based document retrieval and discussion search, based on probabilistic Datalog.
JaySpirit	Java API for the HySpirit retrieval framework (which is written in Perl and C). Available at https://github.com/ifromm/jayspirit .
Executive Search	Java implementation (Web service, middleware) of a search engine for executives, combining database and retrieval technology.
Daffodil	I was responsible for the annotation services in the Daffodil system.
COLLATE	I designed and implemented the search and retrieval module in the COLLATE prototype.
Further Projects	During my time as a software developer I was responsible for the design and implementation of several software modules in different projects. In my consultancy projects I develop advanced search services.

Languages

German	native
English	fluent

Publications

Refereed Publications

Ingo Frommholz, Haider Al-Khateeb, Martin Potthast, Zinnar Ghasem, Mitul Shukla, and Emma Short. On textual analysis and machine learning for cyberstalking detection. *Datenbank-Spektrum*, 2016. Accepted for publication.

Ingo Frommholz and Thomas Roelleke. Scalable DB+IR technology: Processing probabilistic datalog with HySpirit. *Datenbank-Spektrum*, 16(1):39–48, 2016.

Muhammad Kamran Abbasi and Ingo Frommholz. Cluster-based polyrepresentation as science modelling approach for information retrieval. *Scientometrics*, 102(3):2301–2322, 2015.

Muhammad Kamran Abbasi and Ingo Frommholz. Polyrepresentative clustering: A study of simulated user strategies and representations. In Philipp Mayr, Ingo Frommholz, and Peter Mutschke, editors, *Proc. of the 2nd Workshop on Bibliometric-enhanced Information Retrieval (BIR2015)*, pages 47–54, Vienna, Austria, 2015. CEUR-WS.org.

Zinnar Ghasem, Ingo Frommholz, and Carsten Maple. A Machine Learning Framework to Detect And Document Text-based Cyberstalking. In Claus-Peter Klas and Ingo Frommholz, editors, *Proceedings Information Retrieval Workshop at Lernen-Wissen-Adaptivität (LWA 2015)*, number October, pages 348–355, Trier, Germany, 2015. CEUR-WS.org.

Zinnar Ghasem, Ingo Frommholz, and Carsten Maple. A hybrid approach to combat email-based cyberstalking. In *The Fourth International Conference on Future Generation Communication Technologies (FGCT 2015)*, pages 106–111, Luton, UK, 2015. IEEE.

Zinnar Ghasem, Ingo Frommholz, and Carsten Maple. Machine learning solutions for controlling cyberbullying and cyberstalking. *Journal of Information Security Research*, 6(2):55–64, 2015.

Zinnar Ghasem, Ingo Frommholz, and Carsten Maple. A new approach for selecting informative features for text classification. In Claus-Peter Klas and Ingo Frommholz, editors, *Proceedings Information Retrieval Workshop at Lernen-Wissen-Adaptivität (LWA 2015)*, number October, pages 382–389, Trier, Germany, 2015. CEUR-WS.org.

Ghulam Mustafa and Ingo Frommholz. Performance comparison of Top N recommendation algorithms. In *The Fourth International Conference on Future Generation Communication Technologies (FGCT 2015)*, pages 100–105, Luton, UK, 2015. IEEE.

Muhammad Kamran Abbasi and Ingo Frommholz. Exploiting information needs and bibliographics for polyrepresentative document clustering. In *Proceedings of the Bibliometrics-enhanced Information Retrieval Workshop at ECIR 2014*, pages 21–28, 2014.

Karen Chessum, Haiming Liu, and Ingo Frommholz. Applying cross-cultural theory to understand users' preferences on interactive information retrieval platform design. In *Proceedings euroHCIR 2014*, 2014.

Ingo Frommholz and Muhammad Kamran Abbasi. On clustering and polyrepresentation. In *Proceedings of the European Conference on Information Retrieval (ECIR 2014)*, pages 618–623, 2014.

Ingo Frommholz, David Graves, Haiming Liu, Ashwin Kumar, and Gordon Brady. Great War stories told by the people – crowdsourced cultural heritage in digital museums. In *Proceedings Digital Libraries 2014 (ACM/IEEE Joint Conference on Digital Libraries (JCDL 2014) and International Conference on Theory and Practice of Digital Libraries (TPDL 2014))*, pages 419–420, 2014.

Obaid Almalki, Yanqing Duan, Ingo Frommholz, and Markus Haag. Identifying the Relevance of Personal Values to e-Government Portals' Success: Insights from a Delphi Study. In *Proc. of the International Conference on Information and Social Science (ISS 2013)*, pages 97–112, 2013.

Birger Larsen, Christina Lioma, Ingo Frommholz, and Hinrich Schütze. Preliminary study of technical terminology for the retrieval of scientific book metadata records categories and subject descriptors. In *SIGIR 2012: Proceedings of the 35th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 1131–1132, August 2012.

Obaid Almalki, Janqing Duan, and Ingo Frommholz. An exploratory study on e-government systems success in Saudi Arabia. In *Proceedings of the 12th European Conference on eGovernment (ECEG 2012)*, pages 38–46, July 2012.

Ingo Frommholz, Benjamin Piwowarski, Mounia Lalmas, and Keith van Rijsbergen. Processing queries in session in a quantum-inspired IR framework. In *Proceedings of the 33rd European Conference on IR Research (ECIR 2011)*, pages 751–754. Springer, 2011. **Nominated for best poster award.**

Fabrizio Smeraldi, Miguel Martinez-Alvarez, Ingo Frommholz, and Thomas Roelleke. Logical modelling of quantum- and geometrically-inspired IR. In *Proceedings of the 2nd Italian Information Retrieval (IIR) Workshop*, 2011.

David Zellhöfer, Ingo Frommholz, Ingo Schmitt, Mounia Lalmas, and Keith van Rijsbergen. Towards quantum-based DB+IR processing based on the principle of polyrepresentation. In *Proceedings of the 33rd European Conference on IR Research (ECIR 2011)*, pages 729–732. Springer, 2011. **Nominated for best poster award.**

Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith Van Rijsbergen. What can quantum theory bring to information retrieval? In *Proc. 19th International Conference on Information and Knowledge Management (CIKM 2010)*, pages 59–68, October 2010.

Dawei Song, Mounia Lalmas, Keith van Rijsbergen, Ingo Frommholz, Benjamin Piwowarski, Jun Wang, P Zhang, Guido Zuccon, Peter Bruza, Sachi Arafat, Leif Azzopardi, Alvaro Huertas-Rosero, Y Hou, Massimo Melucci, and Stefan Rieger. How quantum theory is developing the field of information retrieval. In *Proceedings Quantum Interaction 2010*, October 2010.

Ingo Frommholz, Birger Larsen, Benjamin Piwowarski, Mounia Lalmas, Peter Ingwersen, and Keith van Rijsbergen. Supporting polyrepresentation in a quantum-inspired geometrical retrieval framework. In *Proceedings of the 2010 Information Interaction in Context Symposium*, pages 115–124, New Brunswick, August 2010. ACM. **Shortlisted for best paper award.**

Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith van Rijsbergen. Exploring a multidimensional representation of documents and queries. In *Proceedings of the 9th RIAO Conference (RIAO 2010)*, Paris, France, June 2010.

Benjamin Piwowarski, Ingo Frommholz, Yashar Moshfeghi, Mounia Lalmas, and Keith van Rijsbergen. Filtering documents with subspaces. In *Proceedings of the 32nd European Conference on Information Retrieval (ECIR 2010)*, pages 615–618, January 2010. **Best poster award!**

Erik Graf, Ingo Frommholz, Mounia Lalmas, and Keith van Rijsbergen. Knowledge modeling in prior art search. In Hamish Cunningham, Allan Hanbury, and Stefan Rüger, editors, *Proceedings of the First Information Retrieval Facility Conference, IRFC 2010*, volume 6107 of *Lecture Notes in Computer Science*, pages 31–46, Berlin, Heidelberg, 2010. Springer Berlin Heidelberg.

Thomas Beckers, Ingo Frommholz, and Ralf Bönning. Multi-facet classification of e-mails in a helpdesk scenario. In Thomas Mandl and Ingo Frommholz, editors, *Proc. of the GI Information Retrieval Workshop at LWA 2009*, 2009.

Ingo Frommholz and Keith Van Rijsbergen. Towards a geometrical model for polyrepresentation of information objects. In Thomas Mandl and Ingo Frommholz, editors, *Proc. of the GI Information Retrieval Workshop at LWA 2009*, 2009.

Ingo Frommholz and Marc Lechtenfeld. Determining the polarity of postings for discussion search. In *Proc. of the "Information Retrieval 2008" Workshop at LWA 2008, Würzburg, Germany*, October 2008.

Norbert Fuhr, Matthias Jordan, and Ingo Frommholz. Combining cognitive and system-oriented approaches for designing IR user interfaces. In *Proceedings of the 2nd International Workshop on Adaptive Information Retrieval (AIR 2008)*, October 2008.

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