Prof. Dr. Ingo Frommholz

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

Contents

Current Positions

Professor of Applied Data Science, Modul University, Vienna, Austria
Adjunct Professor (Lehrbeauftragter) at the Bern University of Applied Sciences, Switzerland

Personal Information

Nationality German, British

Summary

- Interested in Deep Learning, AI and NLP for user-oriented Information Retrieval and Data Science
- Professor and Head of School of Applied Data Science, Modul University Vienna, Austria
- Founder and head of the Data Science and AI Research group at the University of Wolverhampton.
- Chair, BCS Information Retrieval Specialist Group (BCS-IRSG)
- PhD in Computer Science (Dr. rer. nat., summa cum laude), University of Duisburg-Essen, Germany
- Funding/PI: EU Horizon Europe MSCA Staff Exchange project OMINO on Information Overload (2023-2027, UKRI guarantee funding, total 1,550,200.00€, own part 253,000€); PI of the EU H2020 ETN QUARTZ on quantum mechanics and information retrieval (2016-2020, total 3,461,495.04€, own part 546,757.76€); PI of the internally funded RIGHT project on deep learning for digital humanities (since 2023, GBP 612,621). PI of further smaller research and knowledge transfer projects.
- Published more than 100 refereed and unrefereed articles, preprints, reports, proceedings, books and book sections
- Senior managing editor of the International Journal on Digital Libraries (Springer)
- General Chair ACM CIKM 2023, Birmingham (Core-A-ranked conference with 750 delegates)
- Steering committee member, ACM CIKM (Core-A-ranked conference) and ACM SIGIR-ICTIR conference series
- Chair and (senior) programme committee member of several world-leading conferences and journals in Information Retrieval, AI and Digital Libraries
- Organiser of several international workshops (e.g., BIR, BIRNDL, BIRDS, BCS Search Solutions, FDIA) and schools (ESSIR, ASIRF)
- Course and programme co-ordinator for Computer Science, Data Science and Artificial Intelligence undergraduate and postgraduate programmes; module co-ordinator and lecturer in the UK, Austria, Germany, Switzerland, Oman and Jordan of several Computer Science topics at undergraduate and postgraduate level , such as: Information Retrieval, Machine Learning and Artificial Intelligence, Data Mining, Data Science, Cybermetrics and Statistics, Data Engineering, Databases and Data Modelling, Programming and Data Structures, Distributed Computing
- Supervised 10 PhD students to successful completion; examiner for 13 PhD candidates in the UK, Denmark, France, Finland, The Netherlands, Italy and Germany
- BCS Fellow (FBCS), ACM Member (SIGIR), Advance HE Fellow (FHEA)

○ External examiner, University of Strathclyde, Glasgow, UK and University of Sheffield, UK

Research Interests

○ User-oriented Interactive Information Retrieval and Access models;
○ Quantum-inspired Information Retrieval
○ Deep Learning, Large Language Models & generative AI, Retrieval-Augmented Generation
○ Bibliometric-enhanced Information Retrieval and academic search
○ Database and Information Retrieval Integration
○ Cross-cultural information retrieval
○ Information Retrieval, NLP and AI applications, e.g. in: Digital Humanities, Scientometrics, Social Sciences, Digital Libraries, Data Science and Big Data, Cyberstalking Detection

Education

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)**.

2001 **Diplom-Informatiker (MSc Computer Science equivalent)**, *University of Dortmund*, Germany
Thesis: *Automatic categorisation of Web documents*. Examiner: Prof. Dr. Norbert Fuhr.
Major topics during studies: Operating Systems, Computer Networks &x Distributed Systems, Databases, Information Retrieval, Business Informatics. **German highest grade (1.0)**.

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.

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.

Professional Experience

03/2025– **Professor of Applied Data Science and Head of School**, *School of Applied Data Science,*
Present *Modul University*, Vienna, Austria

02/2023– **Adjunct Professor (Lehrbeauftragter)**, *School of Engineering and Computer Science, Bern*
Present *University of Applied Sciences*, Biel/Bienne, Switzerland

12/2020– **Reader (Associate Professor equivalent) in Data Science**, *School of Engineering, Computing*
02/2025 *and Mathematical Sciences, University of Wolverhampton*, UK

02/2011– **Lecturer/Senior Lecturer**, *School of Computer Science and Technology, University of Bedford-*
11/2020 *shire*, Luton, UK
02/2011-07/2012 Lecturer, appointed Senior Lecturer 08/2012

2012–2018 **Search and Data Science Consultant**, *Self Employed*, London, UK

11/2008– **Postdoctoral Research Associate**, *Information Retrieval Group, School of Computing Science,*
01/2011 *University of Glasgow*, Glasgow, Scotland

10/2004– **Research Assistant**, *Information Systems Group, Faculty of Engineering Sciences, University of*
10/2008 *Duisburg-Essen*, Duisburg, Germany

3/2006– **Visiting researcher**, *Information Management Systems Research Group, University of Padua*,
4/2006 Italy

3/2001– **Research Assistant**, *Fraunhofer Integrated Publication and Information Systems Institute (IPSI)*,
9/2004 Darmstadt, Germany

11/1999–2/2001	**Software Developer**, *adesso GmbH*, Dortmund, Germany
5/1998–10/1999	**Software Developer**, *o.tel.o GmbH*, Düsseldorf, Germany
8/1994–4/1998	**Software Developer**, *Lion Ges. für Systementwicklung mbH*, Bochum, Germany

Research and Industry Grants and Projects

Successful Research Grants

Grants to which I contributed significantly in a leading role to the successful bid and/or have been the Principle Investigator (PI) and work package leader.

2023–2026   **OMINO**, *University of Wolverhampton & Modul University Vienna*, UK

EU Horizon Europe MSCA Staff Exchange project (guarantee funded by UKRI/EPSRC) (total worth GBP 1,342,174 (EUR 1,550,200.00), UoW part GBP 218,036 (EUR 253,000)). Topic: Tackling information overload. Project partners: Warsaw University of Technology (Poland, consortium lead), Wroclaw University of Science and Technology (Poland), Bar-Ilan University (Israel), University of Wolverhampton (UK), Modul University Vienna (Austria), Slovenian Press Agency (Slovenia), GESIS Leibniz Institute for the Social Sciences (Germany), Technion – Israel Institute of Technology (Israel); plus several associate partners in the US, UK, Singapore, Japan, China, Australia and The Netherlands. Co-authored the successful research proposal, specified the main work package on retrieval and recommendation to tackle information overload in academia. PI and work package leader, working on creating and evaluating AI-based search and recommendation technologies to avoid information overload. Above equal leading contribution as work package leader, researcher, supervisor and PI for the University of Wolverhampton (2023–2025) and Modul University Vienna (since 2025).

2023–2024   **RIGHT – Responsible Digital Humanities Lab**, *University of Wolverhampton*, UK

Internally funded project(worth GBP 612,621). Topic: deep learning for digital humanities. Equal leading contribution as PI and supervisor.

2023–2024   **LASER**, *University of Wolverhampton*, UK

Internally funded PhD project (worth GBP 39,000). Topic: Large language models in information retrieval. PI and single proposal author.

2016–2020   **QUARTZ**, *University of Bedfordshire*, Luton, UK

EU H2020 Marie Curie ITN European Training Network (worth GBP 2,996,988 (EUR 3,461,495.04), own part GBP 473,387 (EUR 546,575.76)). Topic: quantum-based information access and retrieval. Other project Partners: University of Padua (Italy, consortium lead), The Open University (UK), Vrije Universiteit Brussels (Belgium), University of Copenhagen (Denmark), Brandenburg University of Technology (Germany), Linnæus University (Sweden). Co-authored the successful research proposal and specified a work package on interactive quantum-inspired retrieval models. PI and work package leader, working on multimodal retrieval models inspired by quantum mechanics and information foraging theory. Above equal leading contribution as work package leader, supervisor of early stage researchers, and PI.

2012–2013   **Rising Star**, *University of Bedfordshire*, Luton, UK

Internal Research Investment Rising Star Funding (GBP 6,000). Topic: Query session processing for information seeking and searching. PI and working on information retrieval approaches. Single proposal author.

2010–2011   **QONTEXT**, *University of Glasgow*, Glasgow, UK

EU Marie Curie FP7-IRSES project. Topic: information retrieval and quantum theory. Other partners: University of Aberdeen (UK), University of Padua (Italy) and Open University (UK) Co-authored the successful research proposal. Worked on quantum-inspired retrieval models. Equal contribution.

2004–2006   **CLASSIX**, *University of Duisburg-Essen*, Duisburg, Germany

German Research Foundation (DFG) project. Topic: classification and intelligent search on information in XML. Other partner: University of Saarbrücken (Germany). PI and working on annotation-based retrieval models with structure documents. Main contributor (80%).

Successful KTP and Industry Grants

I led the successful bids and have been the Principle Investigator (PI) and lead academic.

2016–2019 **Drax Technology Ltd**, *University of Bedfordshire*, Luton, UK

Innovate UK Knowledge Transfer Partnership with Drax Technology(worth GBP 134,752). Topic: Internet of Things, machine learning and intelligent fire alarms. Led and co-authored the successful bid (60% contribution). Lead academic and PI, supervising an MSC-by-research student working on machine learning solutions to detect false fire alarms.

2012–2018 **NotActivelyLooking.com**

Private consultancy project (in collaboration with industry partners, worth ca. GBP 20,000). Topic: design and implementation of a search engine for executives. Successfully negotiated with the client and acquired the project. PI and main software designer and developer. Main contributor (80%).

2016–2017 **Wardown Park Talking Objects**, *University of Bedfordshire*, Luton, UK

With Wardown Park Museum, Luton (Luton Cultural Services Trust, GBP 18,971). Topic: combining augmented reality and conversational information retrieval. PI and supervision of an MSc-by-Research student working on augmented reality and information retrieval in a museum. Contribution around 40%.

2015 **EduVocation**, *University of Bedfordshire*, Luton, UK

Teacher recruitment site and information system based on linked open data (UK Innovation Voucher, GBP 5,000). Led and co-authored the successful bid. PI and supervision of an MSc student working on search solutions for the website. The project led to the establishment of the successful MyNewTerm.com startup. Contribution around 40%.

2013–2015 **Luton Culture World War I project**, *University of Bedfordshire*, Luton, UK

With Luton Museum (UK Lottery Fund, GBP 16,000). Digital Museum and Linked Data project on World War I. Led and co-authored the successful bid. PI, lead academic and supervisor of a software developer. Contribution around 40%.

2006 **KIIB**, *University of Duisburg-Essen*, Duisburg, Germany

EU-EUREGIO project in collaboration with d.velop AG, Gescher, Germany. Topic: business processes and email classification. Led and co-authored the successful bid. PI and main contributor (90%) to the resulting study.

Research Projects

In these projects, I contributed significantly to relevant work packages with my expertise.

2016–2017 **EDISON**, *University of Bedfordshire*, Luton, UK

EU H2020 Coordination and Support Action to accelerate the creation of Data Science profession. UoB participated as Data Science Champion University, which I led and initiated. Presented and discussed our ideas to establish an undergraduate Data Science programme with international partners.

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, formulation of the underlying theory.

2008 **LACOSTIR**, *University of Duisburg-Essen*, Duisburg, Germany

German Research Foundation project on interactive retrieval. Main tasks: specification of a model for interactive retrieval, formulation of the underlying theory.

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.

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, implementation and evaluation 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.

KTP Projects

In these projects, I contributed significantly to relevant work packages with my expertise.

2020–2022 **SOLVD**, *University of Wolverhampton*, Wolverhampton, UK
EU European Regional Development Fund to support SMEs in the adoption of digital technologies. Main task: knowledge exchange (AI, automation, search technologies) with industry, and supervision.

2016 **CRASH**, *University of Bedfordshire*, Luton, UK
Comprehensible system for the classification of cyberstalking and harassment cases, in collaboration with Bedfordshire Police (Cyber Risk Assessment of Stalking and Harassment). Main task: supervision and design of a machine-learning-based framework against cyber stalking.

Research Student Supervision, Mentorship and Examination

PhD Projects in Progress

2021–2024 **Khubaib Ahmed: Energy-efficient neural networks for speech enhancements**, *University of Wolverhampton*, UK
Director of studies since 2024.

2023–2026 **Junaid Muzaffar: A new transformer architecture to address permutation-invariant problems in reinforcement learning**, *University of Wolverhampton*, UK
Director of studies since 2024.

2019–2025 **Rocío Caro Quintana: Automatic translation of Spanish Texts**, *University of Wolverhampton*, UK
Director of studies since 2023, part time.

2021–2027 **Jordan Brennan: Training of Large Language Models for Information Retrieval**, *University of Wolverhampton*, UK
Director of studies, part time.

2021–2027 **Oliver Cakebread-Andrews: Improving Sarcasm Detection Through Error Analysis and Building an English Language Corpus in Real Time**, *University of Wolverhampton*, UK
Director of studies since 2023, part time.

Successful PhD and MSc by Research Completions

2021–2025 **Kanishka Silva: Self-Attentive Generative Adversarial Network Based Authorship Attribution for Historical Texts**, *University of Wolverhampton*, UK
Director of studies of the successful PhD thesis of Dr Kanishka Silva, who became a postdoc at GESIS Leibniz Institute for the Social Sciences, Germany.

2021–2025 **Mohsin Raza Naseem: Biologically plausible energy-efficient context-sensitive neural networks**, *University of Wolverhampton*, UK
Director of studies of the successful PhD thesis of Dr Mohsin Raza Naseem, who became a postdoc at the University of Sterling, Scotland.

2012–2021 **AQUACOLD: Aggregated Query Understanding And Construction Over Linked Data**, *University of Bedfordshire*, UK
Director of studies of the successful PhD thesis of Dr Nick Collis (part time). Dr Collis became Senior Digital Education Support Analyst at Imperial College, London, UK.

2012–2020 **A Conceptual Framework to Support Cross-cultural User Experience Design for Web Search**, *University of Bedfordshire*, UK

Director of Studies of the successful PhD thesis of Dr Karen Chessum (part time). Dr Chessum became Lecturer at the University of Bedfordshire, UK.

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. Dr Abbasi became Associate Professor at the University of Sindh, Pakistan.

2013–2017 **A Methodology for Contextual Recommendation using Artificial Neural Networks**, *University of Bedfordshire*, UK

Director of studies of the successful PhD thesis of Dr Ghulam Mustafa. Dr Ghulam Mustafa became Assistant Professor at University of Central Punjab Lahore, Pakistan.

2011–2015 **A Framework for e-Government Success from the User's Perspective**, *University of Bedfordshire*, UK

2nd supervisor of the successful PhD thesis of Dr Obaid Almalki. Dr Obaid Almaki works for the Saudi Arabian government.

2012–2018 **A Computer Assisted Analysis of Literary Text: From Feature Analysis To Judgements of Literary Merit**, *University of Bedfordshire*, UK

2nd supervisor of the successful PhD thesis of Dr Tess Crosbie. Dr Tess Crosbie became Senior Lecturer in Computer Science at the University of Bedfordshire, UK.

2018–2023 **Investigation of Quantum-inspired Modelling in Interactive Search based on Information Foraging Theory**, *University of Bedfordshire*, UK

2nd supervisor of the successful PhD thesis of Dr Amit Kumar Jaiswal. Dr Amit Kumar Jaiswal became a Postdoctoral Research Fellow at the University of Surrey, UK, and UCL, UK, and Assistant Professor at IIT Varanasi, India.

2017–2022 **A Theory-based Content-based Image Retrieval Approach for Capturing User Preferences during Query Formulation**, *University of Bedfordshire*, UK

2nd supervisor of the successful PhD thesis of Dr Mohammed Mahmoud Artemi. Dr Mahmoud Artemi became Lecturer at the University of Bedfordshire, UK.

2017–2018 **Developing and Evaluating a Cost-effective Solution for Augmented Reality Conversational Agents for Museums**, *University of Bedfordshire*, UK

Director of studies of the successful MSc by Research project of MSc Sebastian Grygiel. Sebastian Grygiel became Software Engineer in London, UK.

2017–2020 **Use of machine learning to reduce false fire alarms**, *University of Bedfordshire*, UK

Director of studies of the MSc by Research project of MSc Usman Ali. Usman Ali became Full Stack Developer at Filament AI in London, UK.

Ph.D Mentorship

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. She became Senior Principal Researcher at Microsoft Research, Cambridge, UK.

2010-2011 **Human Information Processing Based Information Retrieval**, *University of Glasgow*, Glasgow, UK

I have been assisting in supervising the successful PhD of Prof. Dr. Erik Graf about human information processing and information retrieval (supervisor: M. Lalmas). Dr. Erik Graf became Professor at the Bern University of Applied Sciences, Switzerland.

Ph.D and MSc by Research Examiner

2023–2025 **Internal reviewer for annual Ph.D progress (APR)**, *University of Wolverhampton*, UK
Internal reviewing process of University of Wolverhampton's PhD students.

2025 **External examiner Ph.D Thesis "Identifying and Annotating Scientific Uncertainty in Scholarly Texts: Methods, Frameworks, and Applications" by Panggih Kusuma Ningrum**, *Université Marie & Louis Pasteur*, Besançon, France

2025 **Depth Exam examiner Ph.D candidate Naghmeh Farzi on LLM-as-a-judge**, *University of New Hampshire*, Durham, New Hampshire, USA

2025 **Internal examiner Ph.D Thesis "A Culturally-Aware Privacy Enhancing Technologies Framework for Improving the E-learning Systems Usage in Libyan Universities" by Marwa Alghodi**, *University of Wolverhampton*, UK

2023 **External examiner Ph.D Thesis "Logic Based Models for Information Retrieval in Social Media Context" by Firas Sabbah**, *University of Duisburg-Essen*, Duisburg, Germany

2022 **External examiner Ph.D Thesis "Semantic-aware Retrieval Standards based on Dirichlet Compound Model to Rank Notifications by Level of Urgency" by Mohammad Bahrani**, *Queen Mary, University of London*, UK

2022 **External examiner Ph.D Thesis "Understanding Novice Programmer Behavior on Introductory Courses – Learning Analytics Approach" by Erno Lokkila**, *University of Turku*, Finland

2022 **Internal examiner Ph.D Thesis "Modified mean and quantile regression models for citation analysis" by Marzieh Shahmandi**, *University of Wolverhampton*, UK

2021 **External examiner Ph.D Thesis "Semantic Classification and Evaluation" by Lukas Chaves Lima**, *University of Copenhagen*, Copenhagen, Denmark

2021 **External examiner Ph.D Thesis "Binary Classifier Inspired by Quantum Detection Theory" by Prayag Tiwari**, *University of Padua*, Padua, Italy

2020 **Internal examiner Ph.D Thesis "Energy Efficient Technique for Hadoop MapReduce Cluster Management" by Manal Alalawi**, *University of Bedfordshire*, Luton, UK

2019 **External examiner Ph.D Thesis "Language-Independent Methods for Identifying Cross-Lingual Similarity in Wikipedia" by Monica Paramita**, *University of Sheffield*, Sheffield, UK

2016 **Internal examiner Ph.D Thesis "Using Social Media for Supporting Decision-Making in Managing Public Relations: The Case of Abu Dhabi Police" by Mansour Alkhyeli**, *University of Bedfordshire*, Luton, UK

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 examiner Ph.D Thesis "Semantic Models for Question Answering" by Piero Molino**, *Dipartimento di Informatica, Università Degli Studi Di Bari Aldo Moro*, Bari, Italy

2018 **External examiner MRes "User Engagement with Generous Interfaces for Digital Cultural Heritage" by Rob Speakman**, *Edge Hill University*, Ormskirk, UK

MSc and BSc project supervision

since 2008, ongoing Supervised several MSc and BSc projects in Germany and the UK on machine learning, information retrieval, natural language processing, cybersecurity, high-throughput computing, personal digital assistants, business information systems, distributed systems and computer networks.

Keynotes, Invited Talks and Tutorials

2024   **Keynote on Retrieval-Augmented Generation**, *Shaping The Future Of Our Society Through AI And Data Science Workshop*, University of Derby, UK

2022   **Tutorial on Information Retrieval Evaluation**, *BCS/ISKO Exploring Information Retrieval Lecture Series*, online

2021   **Practitioners' Evaluation Roundtable**, *BCS Search Solutions*, London, UK, Interactive tutorial on evaluation in academia and industry.

2014–2019   **Tutorial series on information retrieval models.**, *Information Retrieval and Foraging Autumn School*, Schloß Dagstuhl, Germany

2015   **Keynote on Polyrepresentation in Complex (Book) Search Tasks**, *6th International Conference of the CLEF Association (CLEF 2015), Social Book Search Lab.*, Toulouse, France
The room was overcrowded until the end of my keynote!

2012   **Tutorial on quantum probabilities and quantum information access and retrieval**, *Information Retrieval Autumn School*, Schloß Dagstuhl, Germany

since 2006, ongoing   **Invited talks**
Several invited talks at university and industry seminars, e.g.: Queen Mary, University of London (2001, on automatic categorisation of Web documents, 2004, on annotation-based information retrieval, 2010, on probabilistic logics, 2020, on quantum-inspired retrieval and polyrepresentation); University of Padua (2006, on annotation-based information retrieval); UCL London (2012, on quantum-inspired retrieval); ; University of Duisburg-Essen (2010, on quantum-inspired information retrieval); Maxeler Technologies Ltd., London (2015, on Twitter Sentiment Analysis with FPGAs); University of Cologne (2015, on information access in digital humanities); University of Nottingham (2016, on quantum-inspired information retrieval); Lumi Ltd., London (2016, on Context, Interaction, Logics and Probability for Complex Search Tasks); Signal Media Ltd., London (2017, on quantum-inspired information retrieval); University of Regensburg (2017, on interactive information retrieval); University of Glasgow (2020, on multimodal information retrieval); Refinitiv (now LSEG Data & Analytics), London (2021, on quantum-inspired information retrieval); University of Southampton (2022, on interactive information access); University of New Hampshire (2022, on quantum-inspired retrieval models and deep learning); University of Exeter (2024, on AI in multimodal interactive information retrieval models), Modul University Vienna (2024, on interactive information retrieval).

Managerial, Leadership and Steering Roles

since 2025   **Head of School of Applied Data Science**, *Modul University*, Vienna, Austria

since 2024   **Chair of the BCS Information Retrieval Specialist Group (BCS-IRSG)**, *The Chartered Institute for IT (BCS)*

2014–2024   **Treasurer, BCS-IRSG**, *The Chartered Institute for IT (BCS)*

since 2011   **Steering committee member, BCS-IRSG**, *The Chartered Institute for IT (BCS)*

2023–2025   **Head of Data Science and AI Research**, *University of Wolverhampton*, UK
Head and founder of Wolverhampton's Data Science and AI Research group DAIREL.

2023–2025   **Deputy Director of Digital Innovation and Services Centre (DISC)**, *University of Wolverhampton*, UK

since 2024   **Steering committee member, ACM CIKM Conference**
ACM Conference on Information and Knowledge Management, Core-A ranked

since 2024   **Steering committee member, ACM SIGIR ICTIR Conference**
ACM International Conference on Theory in Information Retrieval.

2008–2018   **Steering committee member, German Computing Society Information Retrieval Special Interest Group**
Elected member of the steering committee of the IR Special Interest Group of the German Computing Society (Fachgruppe Information Retrieval der Gesellschaft für Informatik).

2018–2020	**Information and Data Science Subject Cluster Lead**, *University of Bedfordshire*, Luton, UK

2018–2020 **Information and Data Science Subject Cluster Lead**, *University of Bedfordshire*, Luton, UK
Coordinating the Information and Data Science research and teaching activities.

2017–2018 **BCS Accreditation**, *University of Bedfordshire*, Luton, UK
Coordinated the successful BCS accreditation application of undergraduate and postgraduate computer science programmes taught at the University of Bedfordshire.

2016 **VC's Research & Enterprise Sub Group**, *University of Bedfordshire*, Luton, UK
Member of the Vice Chancellor's sub group to shape the university's research and enterprise strategy.

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

Event Organisation

I have been organising several prestigious international conferences, workshops and schools, as general chair (notably ACM CIKM 2023) or main organiser, as well as chair or senior programme committee member.

General Chair and Organiser

2025 **ELLIS ESSIR 2025 – 16th European Summer School on Information Retrieval**, *July 7–11, 2025, Wolverhampton*, UK
General chair and in charge of the scientific programme, including Information Retrieval and AI topics.

2022–2023 **CIKM 2023 – ACM International Conference on Information and Knowledge Management**, *October 21–25, 2023, Birmingham*, UK
Leading General Chair. Core-A ranked conference with 750 registered delegates, approx. 650 accepted papers from ca. 2500 submissions, and world-leading keynote speakers.

2015–2024 **BIR/BIRNDL – International Workshop on Bibliometric-enhanced Information Retrieval; The Joint Workshop on Bibliometric-enhanced Information Retrieval and Natural Language Processing for Digital Libraries**
Co-organiser of the workshop series held at ECIR, JCDL and SIGIR conferences 2015–2024. Guest editor of corresponding special issues at IJDL and Scientometrics.

2016–2024 **BCS Search Solutions**, *London*, UK
Co-organiser of the annual BCS Search Solutions Conference on Innovations in Search & Information Retrieval.

2020–2021 **BIRDS – International Workshop on Bridging the Gap Between Information Science, Information Retrieval and Data Science**
Co-organiser of the interdisciplinary Information Science, Information Retrieval and Data Science workshop at SIGIR 2020 and CHIIR 2021.

2017–2024 **FDIA – Future Directions in Information Access**
Co-organiser of the symposium for PhD students in Information Retrieval. 2017 (Barcelona, Spain), 2018 (Tianjin, China), 2019 (Milan, Italy), 2022 (Lisbon, Portugal), 2023 (Vienna, Austria), 2024 (Amsterdam, The Netherlands).

2019 **TALMIRI – TALent Meets Information Retrieval Industry**, *Luton*, UK
Organised a 1-day symposium to bring together academia and industry.

2014–2019 **Information Retrieval and Foraging Autumn School**, Germany
Co-organiser of annual one week schools on selected information foraging and retrieval topics (2014, 2016–2019 at Schloß Dagstuhl, Germany, 2015 at Castle Katlenburg, Germany)

2006 **Heterogeneous Track at the Initiative for the Evaluation of XML Retrieval**
Co-organiser of the INEX 2006 Heterogeneous Track.

Chair and Senior PC Member, Mentoring

2025 **ACM JCDL 2025**, *online*
Programme Chair.

2025 **ACM SIGIR 2025**, *Padua*, Italy
Senior PC Member.

2025 **ACM CHIIR 2025**, *Melbourne*, Australia
Best paper committee chair.

2023 **ACM SIGIR Asian/Pacific (SIGIR-AP 2023)**, *Beijing*, China
Senior PC Member.

2023 **European Conference on Information Retrieval (ECIR 2023)**, *Dublin*, Ireland
Senior PC Member.

2022 **ACM/IEEE Joint Conference on Digital Libraries (JCDL 2022)**, *Cologne*, Germany
Senior PC Member and Publicity Chair.

2019 **European Conference on Information Retrieval (ECIR 2019)**, *Cologne*, Germany
Publicity Chair.

2018 **European Conference on Information Retrieval (ECIR 2018)**, *Grenoble*, France
Publicity Chair.

2018 **ACM SIGIR International Conference on the Theory of Information Retrieval (IC-TIR 2018)**, *Tianjin*, China
Publicity Chair.

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.

2015–2018 **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), 2012 (Dortmund), 2015 (Trier), 2016 (Potsdam).

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.

Other Research Related Activities

Evaluator

since 2019	Evaluator for Deutsche Forschungsgemeinschaft (DFG, German Research Foundation)
since 2022	Evaluator for UKRI Engineering and Physical Sciences Research Council (EPSRC)
2024	Evaluator for NGI Search (Next Generation Internet Discovery and Search, EU Horizon Europe RIA Project)

Editorial Board, Managing Editor and Guest Editor

since 2001	**Senior Managing Editor and Editorial Board Member, International Journal on Digital Libraries (IJDL, Springer)**
since 2009	**Editorial Board Member, Datenbank-Spektrum Journal (Springer)**
2024	**Guest Editor IJDL Special Issue on Scholarly AI and Large Language Models**
2011	**Guest Editor IJDL Focussed Issue on ECDL 2010**
2017	**Guest Editor IJDL Focussed Issue on Bibliometrics and Information Retrieval**
2018–2020	**Guest Editor of several Scientometrics Special Issues on Bibliometrics and Information Retrieval**

Programme Committee and Reviewer

since 2004	Member of the programme committee and reviewer at the following conferences and workshops: ACM SIGIR, ACM CIKM, ACM/IEEE JCDL, ACM ICTIR, ACM CHIIR, ACL, WWW, ECIR, ECDL/TPDL, IEEE Big Data, IIiX, Russian IR Summer School, Quantum Interaction, TIR, KDIR, LWA, LSHC, AIRS, HPCS.
since 2004	Reviewer for several journals such as ACM Transactions on Information Systems (TOIS), Elsevier Information Systems, Elsevier Information Processing & Management (IP&M), The Journal of the American Society for Information Science and Technology (JASIST), The Information Retrieval Journal (Springer), The Computer Journal, PLOS ONE, Theoretical Computer Science (Elsevier), Scientometrics (Springer), ACM Transactions on Computer-Human Interaction (TOCHI) and The International Journal on Digital Libraries (Springer).

EDI and Community Support

since 2024	**Conference Ambassador**, *Birmingham & West Midlands Convention Bureau*, West Midlands Growth Company, UK
	Contributing to attracting conferences in Data Science and AI to Birmingham and the West Midlands.
2022–2024	**CARA Mentorship Scheme**, *Council for At-Risk Academics (CARA)*, UK
	As part of the scheme, I provided mentorship for a researcher from Ukraine.
2021	**Athena SWAN**, *School of Engineering, Computing and Mathematical Sciences*, University of Wolverhampton, UK
	Part of the Athena SWAN Task Force to represent women in Science, Technology, Engineering, Mathematics and Medicine (STEMM). Provided a data analysis on gender balance in admissions in the UK and the university, for the school's Bronze Athena SWAN award application.

Professional Bodies

since 2014	**BCS Fellow (FBCS)**, *The Chartered Institute for IT (BCS)*, UK
	`https://www.bcs.org/membership-and-registrations/become-a-member/bcs-fellowship/`
since 2016	**ACM Member (ACM SIGIR)**, *Association for Computing Machinery*, USA
since 2002	**GI Member**, *Gesellschaft für Informatik*, Germany

since 2012	**Fellow of the Higher Education Academy / AdvanceHE (FHEA)**, UK
	`https://www.advance-he.ac.uk/fellowship/fellowship`
since 2016	**Member of the Engineering Professors' Council (MEPC)**, UK

Language Skills

German	native
English	fluent

10 Selected Publications and their Context

I published more than 100 refereed and unrefereed articles, preprints, reports, proceedings, books and book sections. The below selection of 10 of my peer-reviewed research papers is a snapshot of different aspects of my work. Please note that in Computer Science, significant developments are usually reported in conference and workshop publications, rather than journal articles.

My research touches various domains, such as Data Science, Information Retrieval, Artificial Intelligence, Natural Language Processing, Information Science, Digital Libraries and Human-Computer Interaction. My academic journey began with my work on a probabilistic logic-based framework for Information Retrieval, which is described in [10] and combines concepts from Databases and Information Retrieval. Parts of this [6] were later reused in a successful private consultancy project. During my time as a postdoc at the University of Glasgow, I contributed significantly to the formulation of an interactive information access framework that utilises the maths behind quantum mechanics [9, 8]. My work contributed to the successful application to the highly competitive EU Horizon 2020 European Training Network scheme. The resulting QUARTZ project fully funded 13 PhD students in total working on quantum-inspired interactive information access [4]. Later on, I started working on Bibliometric-enhanced Information Retrieval [7] with its application in academic search and recommendation. This paper started my engagement in the highly successful Bibliometric-enhanced Information Retrieval workshop series (`https://sites.google.com/view/bir-ws/home`). Our bibliometric-enhanced Information Retrieval approaches are used to tackle information overload in the scholarly domain, an emerging research topic we are working on in the context of our EU Horizon 2020 Staff Exchange project OMINO [2], with me as workpackage leader. Since an effective user experience and user interfaces are key for information access, "one size fits all"-type solutions are often not sufficient. Our work on cross-cultural user interface designs addresses these issues [3]. Lately, generative AI, retrieval-augmented generation and large language models (LLMs) had a significant impact due to its huge amount of opportunities, but also several potential threats and shortcomings. Our ongoing work on authorship attribution, with the potential application of detecting LLM-generated forged texts, is one example of how to use generative AI responsibly [1]. My work on AI-driven user-centric Information Access and Retrieval has several applications, for instance in digital humanities and digital libraries [10], eCommerce [6], academic search [7] or cyberstalking detection [5]. My work, while having a Computer Science, Data Science and AI focus, has always combined elements of different user-centred disciplines – for example Information Science (e.g. cognitive [8] and behavioural [4] models), Human-Computer-Interaction [3], Scientometrics [7] and Digital Humanities [10]. This amalgamation of system-oriented and user-oriented research leads towards a new *machine-in-the-loop (MITL)* paradigm in AI and Information Retrieval. In contrast to, and as a possible extension of, the well-known *human-in-the-loop (HITL)* paradigm, the user-driven MITL focusses on the user being in charge and the final decision maker for example for the interactive information seeking process – in contrast to HITL, where the user plays a more passive role in a data-driven process.

I contributed to all papers either as main author [10, 8, 6, 5], as collaborator significantly contributing my ideas to the formulation and evaluation of frameworks [9] and perspectives [2], or as PhD supervisor discussing and providing ideas and critically challenging but also encouraging students [7, 4, 3, 1]. I was directly involved in the write-up and discussion of all papers.

[1] Kanishka Silva, Ingo Frommholz, Burcu Can, Fred Blain, Raheem Sarwar, and Laura Ugolini. Forged-GAN-BERT: Authorship Attribution for LLM-Generated Forged Novels. In Neele Falk, Sara Papi, and Mike Zhang, editors, *Proceedings of the 18th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2024): Student Research Workshop*, pages 325–337, St. Julian's, Malta, March 2024. Association for

Computational Linguistics. Contribution: 35%.

[2] Janusz A. Hołyst, Philipp Mayr, Michael Thelwall, Ingo Frommholz, Shlomo Havlin, Alon Sela, Yoed N. Kenett, Denis Helic, Aljoša Rehar, Sebastijan R. Maček, Przemysław Kazienko, Tomasz Kajdanowicz, Przemysław Biecek, Boleslaw K. Szymanski, and Julian Sienkiewicz. Protect our environment from information overload. *Nature Human Behaviour*, pages 1–2, February 2024. Access via sharable link: https://tinyurl.com/3anxzajc – Original URL: https://www.nature.com/articles/s41562-024-01833-8. Contribution: 20%.

[3] Karen Chessum, Haiming Liu, and Ingo Frommholz. An Extended Study of Search User Interface Design Focused on Hofstede's Cultural Dimensions. In Andreas Holzinger, Hugo Plácido Da Silva, Jean Vanderdonckt, and Larry Constantine, editors, *Computer-Human Interaction Research and Applications*, volume 1882, pages 130–152, Cham, 2023. Springer Nature Switzerland. Contribution: 35%.

[4] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Semantic Hilbert Space for Interactive Image Retrieval. In *ICTIR 2021 - Proceedings of the 2021 ACM SIGIR International Conference on Theory of Information Retrieval*, pages 307–315, 2021. Contribution: 35%.

[5] 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*, 16(2):127–135, 2016. Lead author, 75% contribution.

[6] Ingo Frommholz and Thomas Roelleke. Scalable DB+IR Technology: Processing Probabilistic Datalog with HySpirit. *Datenbank-Spektrum*, 16(1):39–48, 2016. Lead author, 80% contribution.

[7] Muhammad Kamran Abbasi and Ingo Frommholz. Cluster-based Polyrepresentation as Science Modelling Approach for Information Retrieval. *Scientometrics*, 102(3):2301–2322, 2015. Contribution: 40%.

[8] Ingo Frommholz, Birger Larsen, Benjamin Piwowarski, Mounia Lalmas, Peter Ingwersen, and Keith Van Rijsbergen. Supporting Polyrepresentation in a Quantum-inspired Geometrical Retrieval Framework. In Paul Clough, Colum Foley, Cathal Gurrin, Gareth J. F. Jones, and Wessel Kraaij, editors, *IIiX '10: Proceedings of the Third Symposium on Information Interaction in Context (IIiX 2010)*, pages 115–124. ACM, 2010. Lead author, 95% contribution.

[9] Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith van Rijsbergen. What can Quantum Theory bring to Information Retrieval? In *CIKM '10: Proceedings of the 19th ACM International Conference on Information and Knowledge Management*, pages 59–68, 2010. Contribution: 40%.

[10] Ingo Frommholz and Norbert Fuhr. Probabilistic, Object-oriented Logics for Annotation-based Retrieval in Digital Libraries. In Michael Nelson, Cathy Marshall, and Gary Marchionini, editors, *Proc. of the 6th ACM/IEEE Joint Conference on Digital Libraries (JCDL 2006)*, pages 55–64, New York, 2006. ACM. Lead author, 100% contribution.

Full List of Publications

Peer-reviewed Conference and Journal Publications

[1] Patrick Steinert, Stefan Wagenpfeil, Ingo Frommholz, and Matthias L. Hemmje. Artificial-Intelligence-Based Image Generation from Scene Graphs for Metaverse Recording Retrieval. *Electronics*, 14(7):1427, January 2025. Number: 7 Publisher: Multidisciplinary Digital Publishing Institute.

[2] Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, Suzan Verberne, and Christin Katharina Kreutz. The First Workshop on Scholarly Information Access (SCOLIA). In Claudia Hauff, Craig Macdonald, Dietmar Jannach, Gabriella Kazai, Franco Maria Nardini, Fabio Pinelli, Fabrizio Silvestri, and Nicola Tonellotto, editors, *Advances in Information Retrieval*, pages 326–331, Cham, 2025. Springer Nature Switzerland.

[3] Oliver Cakebread-Andrews, Le An Ha, Ingo Frommholz, and Burcu Can. Error Analysis of NLP Models and Non-Native Speakers of English Identifying Sarcasm in Reddit Comments. In Nicoletta Calzolari, Min-Yen Kan, Veronique Hoste, Alessandro Lenci, Sakriani Sakti, and Nianwen Xue, editors, *Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024)*, pages 6247–6256, Torino, Italia, May 2024. ELRA and ICCL.

[4] Patrick Steinert, Stefan Wagenpfeil, Ingo Frommholz, and Matthias L. Hemmje. Integration of Metaverse Recordings in Multimedia Information Retrieval. In *Proceedings of the 2024 13th International Conference on Software and Computer Applications*, ICSCA '24, pages 137–145, New York, NY, USA, May 2024. Association for Computing Machinery.

[5] Kanishka Silva, Ingo Frommholz, Burcu Can, Fred Blain, Raheem Sarwar, and Laura Ugolini. Forged-GAN-BERT: Authorship Attribution for LLM-Generated Forged Novels. In Neele Falk, Sara Papi, and Mike Zhang, editors, *Proceedings of the 18th Conference of the European Chapter of the Association for Computational Linguistics*

(EACL 2024): Student Research Workshop, pages 325–337, St. Julian's, Malta, March 2024. Association for Computational Linguistics.

[6] Janusz A. Hołyst, Philipp Mayr, Michael Thelwall, Ingo Frommholz, Shlomo Havlin, Alon Sela, Yoed N. Kenett, Denis Helic, Aljoša Rehar, Sebastijan R. Maček, Przemysław Kazienko, Tomasz Kajdanowicz, Przemysław Biecek, Boleslaw K. Szymanski, and Julian Sienkiewicz. Protect our environment from information overload. *Nature Human Behaviour*, 8:402–403, February 2024. Publisher: Nature Publishing Group.

[7] Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, and Suzan Verberne. Bibliometric-Enhanced Information Retrieval: 14th International BIR Workshop (BIR 2024). In Nazli Goharian, Nicola Tonellotto, Yulan He, Aldo Lipani, Graham McDonald, Craig Macdonald, and Iadh Ounis, editors, *Advances in Information Retrieval*, pages 442–446, Cham, 2024. Springer Nature Switzerland.

[8] Julius Odede and Ingo Frommholz. JayBot – Aiding University Students and Admission with an LLM-based Chatbot. In *Proceedings ACM SIGIR Conference on Human Information Interaction And Retrieval (CHIIR 2024)*, pages 391–395. ACM, 2024.

[9] Patrick Steinert, Stefan Wagenpfeil, Ingo Frommholz, and Matthias Hemmje. 256 Metaverse Recording Dataset. In *ACM Multimedia 2024*, 2024.

[10] Hamed Alhoori, Edward A. Fox, Ingo Frommholz, Haiming Liu, Corinna Coupette, Bastian A. Rieck, Tirthankar Ghosal, and Jian Wu. Who can Submit an Excellent Review for this Manuscript in the Next 30 Days? - Peer Reviewing in the Age of Overload. In *2023 ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, pages 319–320, Santa Fe, NM, USA, June 2023. IEEE.

[11] Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, Suzan Verberne, and Jordan Brennan. Preface to the 13th Workshop on Bibliometric-enhanced Information Retrieval at ECIR 2023. In Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, Suzan Verberne, and Jordan Brennan, editors, *Proceedings of the 13th International Workshop on Bibliometric-enhanced Information Retrieval*, volume 3617 of *CEUR Workshop Proceedings*, pages 1–3, Dublin, Ireland, April 2023. CEUR. ISSN: 1613-0073.

[12] Patrick Steinert, Stefan Wagenpfeil, Paul Mc Kevitt, Ingo Frommholz, and Matthias Hemmje. Parallelization Strategies for Graph-Code-Based Similarity Search. *Big Data and Cognitive Computing*, 7(2):70, April 2023.

[13] Karen Chessum, Haiming Liu, and Ingo Frommholz. An Extended Study of Search User Interface Design Focused on Hofstede's Cultural Dimensions. In Andreas Holzinger, Hugo Plácido Da Silva, Jean Vanderdonckt, and Larry Constantine, editors, *Computer-Human Interaction Research and Applications*, volume 1882, pages 130–152, Cham, 2023. Springer Nature Switzerland. Series Title: Communications in Computer and Information Science.

[14] Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, and Suzan Verberne. Bibliometric-enhanced information retrieval: 13th international BIR workshop (BIR 2023). In Jaap Kamps, Lorraine Goeuriot, Fabio Crestani, Maria Maistro, Hideo Joho, Brian Davis, Cathal Gurrin, Udo Kruschwitz, and Annalina Caputo, editors, *Advances in information retrieval*, pages 392–397, Cham, 2023. Springer Nature Switzerland.

[15] Kanishka Silva and Ingo Frommholz. What if ChatGPT wrote the Abstract? - Explainable Multi-Authorship Attribution with a Data Augmentation Strategy. In *Proceedings of the IACT - The 1st International Workshop on Implicit Author Characterization from Texts for Search and Retrieval (IACT@SIGIR 2023)*, pages 38–48, Taipei, Taiwan, 2023. CEUR-WS.org.

[16] Patrick Steinert, Stefan Wagenpfeil, Ingo Frommholz, and Matthias L. Hemmje. Towards the Integration of Metaverse and Multimedia Information Retrieval. In *2023 IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE)*, pages 581–586. IEEE, 2023.

[17] Karen Chessum, Haiming Liu, and Ingo Frommholz. A Study of Search User Interface Design Based on Hofstede's Six Cultural Dimensions. In *Proceedings 6th International Conference on Computer-Human Interaction Research and Applications (CHIRA 2022)*, pages 145–154, Valetta, Malta, October 2022. SciTePress.

[18] Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, and Suzan Verberne. Bibliometric-enhanced Information Retrieval: 12th International BIR Workshop (BIR 2022). In *Proceedings European Conference on Information Retrieval (ECIR 2022)*. Springer, 2022.

[19] Sérgio Nunes, Suzanne Little, Sumit Bhatia, Ludovico Boratto, Guillaume Cabanac, Ricardo Campos, Francisco M. Couto, Stefano Faralli, Ingo Frommholz, Adam Jatowt, Alípio Jorge, Mirko Marras, Philipp Mayr, and Giovanni Stilo. ECIR 2020 workshops: assessing the impact of going online. *ACM SIGIR Forum*, 54(1):7:1–7:11, February 2021.

[20] Nicholas Collis and Ingo Frommholz. AQUACOLD: A Novel Crowdsourced Linked Data Question Answering System. In Ingo Frommholz, Haiming Liu, and Massimo Melucci, editors, *Proceedings Second Workshop on Bridging the Gap*

between Information Science, Information Retrieval and Data Science (BIRDS 2021), pages 11–25. CEUR-WS.org, 2021.

[21] Nicholas Collis and Ingo Frommholz. Crowdsourced Linked Data Question Answering with AQUACOLD. In *Procedings of the ACM/IEEE Joint Conference on Digital Libraries (JCDL 2021)*. ACM, 2021.

[22] Ingo Frommholz, Guillaume Cabanac, Philipp Mayr, and Suzan Verberne. Report on the 11th Bibliometric-enhanced Information Retrieval Workshop (BIR 2021). *SIGIR Forum*, 55(1):1–9, 2021.

[23] Ingo Frommholz, Haiming Liu, and Massimo Melucci. BIRDS 2021: Bridging the Gap between Information Science, Information Retrieval and Data Science. In Falk Scholer, Paul Thomas, David Elsweiler, Hideo Joho, Noriko Kando, and Catherine Smith, editors, *CHIIR '21: Proceedings of the 2021 Conference on Human Information Interaction and Retrieval*, pages 349–350, Canberra, Australia, 2021. ACM.

[24] Ingo Frommholz, Haiming Liu, and Massimo Melucci. Report on the 2nd Workshop on Bridging the Gap between Information Science, Information Retrieval and Data Science (BIRDS 2021). *SIGIR Forum*, 55(1):1–6, 2021.

[25] Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, and Suzan Verberne. Bibliometric-enhanced Information Retrieval: 11th International BIR Workshop. In *Proceedings ECIR 2021*. Springer, 2021.

[26] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Semantic Hilbert Space for Interactive Image Retrieval. In *ICTIR 2021 - Proceedings of the 2021 ACM SIGIR International Conference on Theory of Information Retrieval*, pages 307–315, 2021.

[27] Guillaume Cabanac, Ingo Frommholz, and Philipp Mayr. Scholarly literature mining with information retrieval and natural language processing: Preface. *Scientometrics*, 125(3):2835–2840, December 2020.

[28] Guillaume Cabanac, Ingo Frommholz, and Philipp Mayr. Bibliometric-Enhanced Information Retrieval 10th Anniversary Workshop Edition. In *Proceedings European Conference on Information Retrieval (ECIR 2020)*, pages 641–647, Lisbon, Portugal, 2020.

[29] Ingo Frommholz, Haiming Liu, and Massimo Melucci. BIRDS-Bridging the Gap between Information Science, Information Retrieval and Data Science. In *Proceedings of the 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 2455–2458. ACM, 2020.

[30] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Reinforcement Learning-driven Information Seeking: A Quantum Probabilistic Approach. In Ingo Frommholz, Haiming Liu, and Massimo Melucci, editors, *Proceedings First Workshop on Bridging the Gap between Information Science, Information Retrieval and Data Science (BIRDS 2020)*, pages 16–29. CEUR-WS.org, 2020.

[31] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Utilising Information Foraging Theory for User Interaction with Image Query Auto-Completion. In *Proceedings European Conference on Information Retrieval (ECIR 2020)*. Springer, 2020.

[32] Sergio Nunes, Suzanne Little, Sumit Bhatia, Ludovico Boratto, Guillaume Cabanac, Ricardo Campos, Francisco M. Couto, Stefano Faralli, Ingo Frommholz, Adam Jatowt, Alpio Jorge, Mirko Marras, Philipp Mayr, and Giovanni Stilo. ECIR 2020 Workshops: Assessing the impact of going online. *SIGIR Forum*, 54(1), 2020. arXiv: 2005.06748.

[33] Guillaume Cabanac, Ingo Frommholz, and Philipp Mayr. Bibliometric-Enhanced Information Retrieval: 8th International BIR Workshop. In *Proceedings European Conference on Information Retrieval (ECIR 2019)*, pages 394–399, Cologne, Germany, 2019. Springer.

[34] Ingo Frommholz, Haiming Liu, and Yashar Moshfeghi. The 9th symposium on future directions in information access. In Ingo Frommholz, Haiming Liu, and Yashar Moshfeghi, editors, *Proceedings of the 9th PhD Symposium on Future Directions in Information Access co-located with 12th European Summer School in Information Retrieval (ESSIR 2019)*, pages 1–3, Milan, Italy, 2019. CEUR-WS.org.

[35] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Effects of Foraging in Personalized Content-based Image Recommendation. In *Proceedings of the 2nd International Workshop on ExplainAble Recommendation and Search (EARS 2019) at SIGIR 2019*, 2019. arXiv: 1907.00483.

[36] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Information Foraging for Enhancing Implicit Feedback in Content-based Image Recommendation. In *Proceedings of the 11th Forum for Information Retrieval Evaluation (FIRE 2019)*, pages 65–69, Kolkata, India, 2019. ACM.

[37] Guillaume Cabanac, Ingo Frommholz, and Philipp Mayr. Bibliometric-enhanced information retrieval: preface. *Scientometrics*, 116(2):1225–1227, 2018.

[38] Amit Kumar Jaiswal, Guilherme Holdack, Ingo Frommholz, and Haiming Liu. Quantum-like Generalization of Complex Word Embedding: a lightweight approach for textual classification. In *Proceedings Lernen Wissen Daten Analysen (LWDA 2018)*, 2018.

[39] Philipp Mayr, Ingo Frommholz, and Guillaume Cabanac. Report on the 7th International Workshop on Bibliometric-enhanced Information Retrieval (BIR 2018). *SIGIR Forum*, 52(1):135–139, 2018.

[40] Waleed Alabbas, Haider Al-Khateeb, Ali Mansour, Gregory Epiphaniou, and Ingo Frommholz. Classification of Colloquial Arabic Tweets in real-time to detect high-risk floods. In *Proceedings International Conference on Social Media, Wearable and Web Analytics (Social Media 2017)*. IEEE, 2017.

[41] Nicholas Collis and Ingo Frommholz. Aquacold - a crowdsourced query understanding and query construction tool for the linked data web. In Philipp Mayr, Douglas Tudhope, Koraljka Golub, Christian Wartena, and Ernesto William De Luca, editors, *Proc. of the 17th European Networked Knowledge Organization Systems Workshop (NKOS 2017) at TPDL 2017*, pages 74–86, Thessaloniki, Greece, 2017. CEUR-WS.org.

[42] Philipp Mayr, Ingo Frommholz, Guillaume Cabanac, Muthu Kumar Chandrasekaran, Kokil Jaidka, Min-Yen Kan, and Dietmar Wolfram. Introduction to the special issue on bibliometric-enhanced information retrieval and natural language processing for digital libraries (BIRNDL). *International Journal on Digital Libraries*, 19(2):1–5, 2017.

[43] Philipp Mayr, Ingo Frommholz, and Guillaume Cabanac. Report on the 5th International Workshop on Bibliometric-enhanced Information Retrieval (BIR 2017). *SIGIR Forum*, 51(1):29–35, 2017.

[44] Guillaume Cabanac, Muthu Kumar Chandrasekaran, Ingo Frommholz, Kokil Jaidka, Min-Yen Kan, Philipp Mayr, and Dietmar Wolfram. Joint workshop on bibliometric-enhanced information retrieval and natural language processing for digital libraries (BIRNDL 2016). In *2016 IEEE/ACM Joint Conference on Digital Libraries (JCDL)*, pages 299–300, June 2016.

[45] Faris Abomelha, Ingo Frommholz, and Paul Sant. A Study of Challenges and Obstacles in Biomedical Data Search. In *Proceedings Medical Information Retrieval (MedIR) Workshop at SIGIR 2016*, Pisa, Italy, 2016.

[46] Guillaume Cabanac, Muthu Kumar Chandrasekaran, Ingo Frommholz, Kokil Jaidka, Min-Yen Kan, Philipp Mayr, and Dietmar Wolfram. Report on the Joint Workshop on Bibliometric-enhanced Information Retrieval and Natural Language Processing for Digital Libraries (BIRNDL 2016). *SIGIR Forum*, 50(2):36–43, 2016.

[47] 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*, 16(2):127–135, 2016.

[48] Ingo Frommholz and Thomas Roelleke. Scalable DB+IR Technology: Processing Probabilistic Datalog with HySpirit. *Datenbank-Spektrum*, 16(1):39–48, 2016.

[49] P. Mayr, I. Frommholz, and G. Cabanac. Bibliometric-enhanced information retrieval: 3rd international BIR workshop. In *Proceedings ECIR 2016*, volume 9626, pages 865–868, 2016. ISSN: 16113349 03029743.

[50] Philipp Mayr, Ingo Frommholz, and Guillaume Cabanac. Editorial for the 3rd Bibliometric-Enhanced Information Retrieval Workshop at ECIR 2016. In *Proceedings BIR 2016 Workshop on Bibliometric-enhanced Information Retrieval*, pages 1–4. CEUR-WS.org, 2016.

[51] Ghulam Mustafa and Ingo Frommholz. Comparing contextual and non-contextual features in ANNs for movie rating prediction. In Ralf Krestel, Davide Mottin, and Emmanuel Müller, editors, *Proceedings of the Conference "Lernen, Wissen, Daten, Analysen", Workshop Information Retrieval*, Potsdam, Germany, 2016. CEUR-WS.org.

[52] M.K. Abbasi and I. Frommholz. Erratum to: Cluster-based polyrepresentation as science modelling approach for information retrieval [Scientometrics, DOI:10.1007/s11192-014-1478-1]. *Scientometrics*, 103(3):1151–1152, 2015.

[53] Muhammad Kamran Abbasi and Ingo Frommholz. Cluster-based Polyrepresentation as Science Modelling Approach for Information Retrieval. *Scientometrics*, 102(3):2301–2322, 2015.

[54] 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.

[55] 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.

[56] 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)*, pages 348–355, Trier, Germany, 2015. CEUR-WS.org.

[57] 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.

[58] 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)*, pages 382–389, Trier, Germany, 2015. CEUR-WS.org.

[59] Philipp Mayr, Ingo Frommholz, and Peter Mutschke. Editorial for the Bibliometric-enhanced Information Retrieval Workshop at ECIR 2015. In *Proceedings of the Second Workshop on Bibliometric-enhanced Information Retrieval (BIR 2015)*, pages 1–4, Vienna, Austria, 2015. CEUR-WS.org. ISSN: 16130073.

[60] 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.

[61] 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.

[62] 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.

[63] Ingo Frommholz and Muhammad Kamran Abbasi. On Clustering and Polyrepresentation. In Maarten de Rijke, Tom Kenter, Arjen P de Vries, ChengXiang Zhai, Franciska de Jong, Kira Radinsky, and Katja Hofmann, editors, *Proceedings of the European Conference on Information Retrieval (ECIR 2014)*, volume 1, pages 618–623. Springer, 2014.

[64] 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) International Conference on Theory and Practice of Digital Libraries (TPDL 2014)*, pages 419–420, 2014.

[65] 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.

[66] 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.

[67] Obaid Almalki, Yanqing Duan, and Ingo Frommholz. An exploratory study on eGovernment systems success in Saudi Arabia. In *Proceedings of the 12th European Conference on eGovernment (ECEG 2012)*, pages 38–46, 2012.

[68] Ingo Frommholz, Benjamin Piwowarski, Mounia Lalmas, and Keith van Rijsbergen. Processing Queries in Session in a Quantum-Inspired IR Framework. In Paul Clough, Colum Foley, Cathal Gurrin, Gareth J F Jones, Wessel Kraaij, Hyowon Lee, and Vanessa Mudoch, editors, *Advances in Information Retrieval*, volume 6611, pages 751–754. Springer, 2011. Series Title: Lecture Notes in Computer Science.

[69] Fabrizio Smeraldi, Miguel Martinez-Alvarez, Ingo Frommholz, and Thomas Roelleke. On the Probabilistic Logical Modelling of Quantum and Geometrically-Inspired IR. In *Proceedings of the 2nd Italian Information Retrieval Workshop 2011*, Milan, 2011.

[70] 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 Paul Clough, Colum Foley, Cathal Gurrin, Gareth J F Jones, Wessel Kraaij, Hyowon Lee, and Vanessa Mudoch, editors, *Advances in Information Retrieval*, volume 6611, pages 729–732. Springer, 2011. Series Title: Lecture Notes in Computer Science.

[71] 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 Rüger. How Quantum Theory is Developing the Field of Information Retrieval. In *Proceedings Quantum Interaction 2010*, October 2010.

[72] Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith Van Rijsbergen. Exploring a Multidimensional Representation of Documents and Queries. In *Proceedings of the 9th RIAO Conferences (RIAO 2010)*, Paris, France, June 2010. University of Glasgow, Department of Computing Science. arXiv: 1002.3238v1.

[73] 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.

[74] I. Frommholz and C.-P. Klas. Workshop information retrieval WIR 2010. In *LWA 2010 - Lernen, Wissen und Adaptivitat - Learning, Knowledge, and Adaptivity, Workshop Proceedings*, pages 167–168, 2010.

[75] I. Frommholz, A. Rauber, and F. Sebastiani. Guest Editors' introduction to the focussed issue on the 14th European Conference on Digital Libraries (ECDL 2010). *International Journal on Digital Libraries*, 11(2):57–58, 2010.

[76] Ingo Frommholz, Birger Larsen, Benjamin Piwowarski, Mounia Lalmas, Peter Ingwersen, and Keith Van Rijsbergen. Supporting Polyrepresentation in a Quantum-inspired Geometrical Retrieval Framework. In Paul Clough, Colum Foley, Cathal Gurrin, Gareth J. F. Jones, and Wessel Kraaij, editors, *IIiX '10: Proceedings of the third symposium on Information Interaction in Context (IIiX 2010)*, pages 115–124. ACM, 2010.

[77] 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, pages 31–46, Berlin, Heidelberg, 2010. Springer Berlin Heidelberg. Series Title: Lecture Notes in Computer Science.

[78] Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith van Rijsbergen. What can Quantum Theory bring to Information Retrieval? In *CIKM '10: Proceedings of the 19th ACM International Conference on Information and Knowledge Management*, pages 59–68, 2010.

[79] 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.

[80] I. Frommholz and T. Mandl. Workshop information retrieval WIR 2009. In *LWA 2009 - Workshop-Woche: Lernen-Wissen-Adaptivitat - Learning, Knowledge, and Adaptivity*, 2009.

[81] 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.

[82] 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.

[83] 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.

[84] Ingo Frommholz. Annotation-based Document Retrieval with Probabilistic Logics. In Norbert Fuhr, Laszlo Kovacs, and Carlo Meghini, editors, *Research and Advanced Technology for Digital Libraries. Proc. of the 11th European Conference on Digital Libraries (ECDL 2007)*, pages 321–332, Heidelberg et al., September 2007. Springer. Series Title: Lecture Notes in Computer Science.

[85] Ingo Frommholz and Ray R Larson. Report on the INEX 2006 Heterogeneous Collection Track. In *SIGIR Forum*, volume 41, June 2007. Series Number: 1.

[86] Ingo Frommholz and Ray R Larson. The Heterogeneous Collection Track at INEX 2006. In Norbert Fuhr, Mounia Lalmas, and Andrew Trotman, editors, *Comparative Evaluation of XML Information Retrieval Systems. INEX 2006*, pages 312–317, Heidelberg et al., 2007. Springer. Series Title: LNCS Series Number: 4518.

[87] Ingo Frommholz and Norbert Fuhr. Evaluation of Relevance and Knowledge Augmentation in Discussion Search. In Julio Gonzalo, Costantino Thanos, M Felisa Verdejo, and Rafael C Carrasco, editors, *Research and Advanced Technology for Digital Libraries. Proc. of the 10th European Conference on Digital Libraries (ECDL 2006)*, pages 279–290, Heidelberg et al., September 2006. Springer. Series Title: Lecture Notes in Computer Science.

[88] Maristella Agosti, Nicola Ferro, Ingo Frommholz, Emanuele Panizzi, Wolfgang Putz, and Ulrich Thiel. Integration of the DiLAS Annotation Service into Digital Library Infrastructures. In Ann Blandford and Jeremy Gow, editors, *Proc. Digital Libraries in the Context of Users' Broader Activities Workshop (CUBA) at JCDL 2006*, June 2006.

[89] Ingo Frommholz and Norbert Fuhr. Probabilistic, Object-oriented Logics for Annotation-based Retrieval in Digital Libraries. In Michael Nelson, Cathy Marshall, and Gary Marchionini, editors, *Proc. of the 6th ACM/IEEE Joint Conference on Digital Libraries (JCDL 2006)*, pages 55–64, New York, 2006. ACM.

[90] Ingo Frommholz. What did the Others Say? Probabilistic Indexing and Retrieval Models in Annotation-based Discussions. *TCDL Bulletin*, 2(2), 2006.

[91] Maristella Agosti, Hanne Albrechtsen, Nicola Ferro, Ingo Frommholz, Preben Hansen, Nicola Orio, Emanuele Panizzi, Annelise Mark Pejtersen, and Ulrich Thiel. DiLAS: a Digital Library Annotation Service. In *Proceedings of Annotation for Collaboration – A Workshop on Annotation Models, Tools and Practices*, 2005.

[92] Ingo Frommholz. Applying the Annotation View on Messages for Discussion Search. In E M Voorhees and Lori P Buckland, editors, *The Fourteenth Text REtrieval Conference (TREC 2005)*, Gaithersburg, MD, USA, 2005. NIST.

[93] P. Knežević, B. Mehta, C. Niederée, T. Risse, U. Thiel, and I. Frommholz. Supporting information access in next generation digital library architectures. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, volume 3664 LNCS, pages 207–222, 2005. ISSN: 03029743 16113349.

[94] Ingo Frommholz, Predrag Knežević, Bhaskar Mehta, Claudia Niederée, Thomas Risse, and Ulrich Thiel. Supporting Information Access in Next Generation Digital Library Architectures. In Maristella Agosti, Hans-Jörg Schek, and Can Türker, editors, *Digital Library Architectures: Peer-to-Peer, Grid, and Service-Orientation. Proceedings of the Sixth Thematic Workshop of the EU Network of Excellence DELOS*, pages 49–60, Cagliari, Italy, June 2004.

[95] Maristella Agosti, Nicola Ferro, Ingo Frommholz, and Ulrich Thiel. Annotations in Digital Libraries and Collaboratories – Facets, Models and Usage. In Rachel Heery and Liz Lyon, editors, *Research and Advanced Technology for Digital Libraries. Proc. European Conference on Digital Libraries (ECDL 2004)*, pages 244–255, Heidelberg et al., 2004. Springer. Series Title: Lecture Notes in Computer Science.

[96] Ingo Frommholz, Ulrich Thiel, and Thomas Kamps. Annotation-based Document Retrieval with Four-Valued Probabilistic Datalog. In Thomas Rölleke and Arjen P de Vries, editors, *Proceedings of the first SIGIR Workshop on the Integration of Information Retrieval and Databases (WIRD'04)*, pages 31–38, Sheffield, UK, 2004.

[97] Marcello L'Abbate, Ingo Frommholz, Ulrich Thiel, and Erich Neuhold. Using Case Based Retrieval Techniques for Handling anomalous Situations in Advisory Dialogues. In Fernando Galindo, Makoto Takizawa, and Roland Traunm Ller, editors, *Proceedings of the 15th International Conference on Database and Expert Systems Application (DEXA 2004)*, pages 539–548, 2004.

[98] E. Neuhold and I. Frommholz. Digital libraries as experienced by the editors of the journal. *International Journal on Digital Libraries*, 4(1):1–2, 2004.

[99] Erich Neuhold and Ingo Frommholz. Editorial of the International Journal on Digital Libraries Special Issue "Digital Libraries as Experienced by the Editors of the Journal". *International Journal on Digital Libraries (IJDL), special Issue "Digital Libraries as Experienced by the Editors of the Journal"*, 4:1–2, 2004. Series Number: 1.

[100] Erich Neuhold, Claudia Niederée, Avaré Stewart, Ingo Frommholz, and Bhaskar Mehta. The Role of Context for Information Mediation in Digital Libraries. In *Proc. of the 7th International Conference on Asian Digital Libraries: International Collaboration and Cross-Fertilization (ICADL 2004)*, pages 133–143, 2004.

[101] Ulrich Thiel, Holger Brocks, Ingo Frommholz, Andrea Dirsch-Weigand, Jürgen Keiper, Adelheit Stein, and Erich Neuhold. COLLATE - A Collaboratory Supporting Research on Historic European Films. *International Journal on Digital Libraries (IJDL)*, 4(1):8–12, 2004. Series Number: 1.

[102] Ingo Frommholz, Holger Brocks, Ulrich Thiel, Erich Neuhold, Luigi Iannone, Giovanni Semeraro, Magarita Berardi, and Michaele Ceci. Document-centered Collaboration for Scholars in the Humanities - The COLLATE System. In Panos Constantopoulos and Ingeborg T Sølvberg, editors, *Research and Advanced Technology for Digital Libraries. Proc. European Conference on Digital Libraries (ECDL 2003)*, pages 434–445, Heidelberg et al., 2003. Springer. Series Title: Lecture Notes in Computer Science.

[103] Ingo Frommholz, Holger Brocks, Ulrich Thiel, and Adelheit Stein. Kontextbasiertes Retrieval unter Verwendung verknüpfter Annotationen. In *32. GI-Jahrestagung*, pages 161–165, Heidelberg et al., October 2002. Springer. Series Title: Informatik 2002.

[104] Holger Brocks, Adelheit Stein, Ulrich Thiel, Ingo Frommholz, and Andrea Dirsch-Weigand. How to Incorporate Collaborative Discourse in Cultural Digital Libraries. In *Proceedings of the ECAI 2002 Workshop on Semantic Authoring, Annotation & Knowledge Markup (SAAKM02)*, Lyon, France, July 2002.

[105] Ingo Frommholz. Categorizing Web Documents in Hierarchical Catalogues. In *23rd European Colloquium on Information Retrieval Research (ECIR 2001)*, March 2001.

Preprints and Technical Reports

[1] Patrick Steinert, Jan Mischkies, Stefan Wagenpfeil, Ingo Frommholz, and Matthias L. Hemmje. Information Need in Metaverse Recordings – A Field Study, November 2024. arXiv:2411.09053 [cs].

[2]   Timo Breuer, Christin Katharina Kreutz, Norbert Fuhr, Krisztian Balog, Philipp Schaer, Nolwenn Bernard, Ingo Frommholz, Marcel Gohsen, Kaixin Ji, Gareth J. F. Jones, Jüri Keller, Jiqun Liu, Martin Mladenov, Gabriella Pasi, Johanne Trippas, Xi Wang, Saber Zerhoudi, and ChengXiang Zhai. Report on the Workshop on Simulations for Information Access (Sim4IA 2024) at SIGIR 2024, September 2024. arXiv:2409.18024 [cs].

[3]   Ingo Frommholz, Sebastijan Maček, and Chris Wyatt. House of Lords Communications and Digital Select Committee inquiry: The future of news: impartiality, trust, and technology — Written Evidence (FON0031), February 2024.

[4]   Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith Van Rijsbergen. Exploring a Multidimensional Representation of Documents and Queries (extended version), 2010.

[5]   Ingo Frommholz and Norbert Fuhr. KI-Methoden zur Email-Archivierung – Technologische Studie zum "Inbox-Szenario". Technical report, November 2006.

[6]   Ingo Frommholz and Matthias Hemmje. Ausarbeitung von Lösungsansätzen für die Erstellung eines Thesaurus-basierten Geologischen Informationssystems des Bayerischen Geologischen Landesamts München. Technical report, Fraunhofer IPSI, Darmstadt, 2001.

Proceedings and Book Sections

[1]   Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, Suzan Verberne, Maria Soledad Pera, Federica Cena, Theo Huibers, Monica Landoni, Noemi Mauro, and Emiliana Murgia, editors. *Proceedings of the 14th International Workshop on Bibliometric-enhanced Information Retrieval, and 1st Workshop on Information Retrieval for Understudied Users*, volume 3989 of *CEUR Workshop Proceedings*. CEUR, Glasgow, Scotland, March 2024. ISSN: 1613-0073.

[2]   Ingo Frommholz, Frank Hopfgartner, Mark Lee, Michael Oakes, Mounia Lalmas, Min Zhang, and Rodrygo Santos, editors. *CIKM '23: Proceedings of the 32nd ACM International Conference on Information and Knowledge Management*. ACM, Birmingham, UK, 2023.

[3]   Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, Suzan Verberne, and Jordan Brennan. *Proceedings of the 13th International Workshop on Bibliometric-enhanced Information Retrieval (BIR 2023)*, volume 3617 of *CEUR Workshop Proceedings*. CEUR-WS.org, Dublin, Ireland, 2023. ISSN: 1613-0073.

[4]   Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, and Suzan Verberne. *Proceedings of the 12th International Workshop on Bibliometric-enhanced Information Retrieval (BIR 2022)*. CEUR-WS.org, 2022.

[5]   Ingo Frommholz, Haiming Liu, Massimo Melucci, Nicholas J. Belkin, Gareth J. F. Jones, Noriko Kando, and Gabriella Pasi. *Joint Proceedings of Bridging the Gap between Information Science, Information Retrieval and Data Science (BIRDS 2021) + Workshop on Evaluation of Personalisation in Information Retrieval (WEPIR 2021)*. CEUR-WS.org, 2021.

[6]   Ingo Frommholz, Philipp Mayr, Guillaume Cabanac, and Suzan Verberne. *Proceedings of the 11th International Workshop on Bibliometric-enhanced Information Retrieval (BIR 2021)*. CEUR-WS.org, 2021.

[7]   Guillaume Cabanac, Ingo Frommholz, and Philipp Mayr. *Proceedings of the 10th International Workshop on Bibliometric-enhanced Information Retrieval co-located with 42nd European Conference on Information Retrieval (ECIR 2020)*. CEUR-WS.org, Lisbon, Portugal, 2020.

[8]   Ingo Frommholz, Haiming Liu, and Massimo Melucci. *Proceedings of the First Workshop on Bridging the Gap between Information Science, Information Retrieval and Data Science (BIRDS 2020)*. CEUR-WS.org, 2020.

[9]   Guillaume Cabanac, Ingo Frommholz, and Philipp Mayr. *Proceedings of the 8th International Workshop on Bibliometric-enhanced Information Retrieval (BIR) co-located with the 41st European Conference on Information Retrieval (ECIR 2019)*. CEUR-WS.org, 2019.

[10]   Ingo Frommholz, Haiming Liu, and Yashar Moshfeghi. *Proceedings of the 9th PhD Symposium on Future Directions in Information Access co-located with 12th European Summer School in Information Retrieval (ESSIR 2019)*. CEUR-WS.org, Milan, Italy, 2019.

[11]   Philipp Mayr, Ingo Frommholz, and Guillaume Cabanac. *Proceedings of the Seventh Workshop on Bibliometric-enhanced Information Retrieval co-located with the 40th European Conference on Information Retrieval (ECIR 2018)*. CEUR-WS.org, Grenoble, France, 2018.

[12]   Philipp Mayr, Ingo Frommholz, and Guillaume Cabanac. *Proceedings of the Fifth Workshop on Bibliometric-enhanced Information Retrieval co-located with the 39th European Conference on Information Retrieval (ECIR 2017)*. CEUR-WS.org, Aberdeen, Scotland, 2017.

[13]   Muthu Kumar Chandrasekaran, Ingo Frommholz, Kokil Jaidka, Min-Yen Kan, Philipp Mayr, and Dietmar Wolfram. *Proceedings of the Joint Workshop on Bibliometric-enhanced Information Retrieval and Natural Language Processing*

for Digital Libraries (BIRNDL) co-located with the Joint Conference on Digital Libraries 2016 (JCDL 2016). CEUR-WS.org, Newark, NJ, USA, 2016.

[14] Philipp Mayr, Ingo Frommholz, and Guillaume Cabanac. *Proceedings of the Third Workshop on Bibliometric-enhanced Information Retrieval co-located with the 38th European Conference on Information Retrieval (ECIR 2016)*. CEUR-WS.org, Padua, Italy, 2016.

[15] Philipp Mayr, Ingo Frommholz, and Peter Mutschke. *Proceedings of the Second Workshop on Bibliometric-enhanced Information Retrieval co-located with the 37th European Conference on Information Retrieval (ECIR 2015)*. CEUR-WS.org, 2015.

[16] Ingo Frommholz, Muhammad Kamran Abbasi, Dunja Mladenić, Marko Grobelnik, and Frederik Aström. Automated Tools for Subject Information Organization: Selected Topics. In Koraljka Golub, editor, *Subject Information Access - an Interdisciplinary Approach*, pages 107–148. Libraries Unlimited, 2014.

[17] Dawei Song, Massimo Melucci, Ingo Frommholz, Peng Zhang, Lei Wang, and Sachi Arafat. *Quantum Interaction: 5th International Symposium, QI 2011, Aberdeen, UK, Revised Selected Papers*. Springer Berlin Heidelberg, October 2011.

[18] Mounia Lalmas, Joemon Jose, Andreas Rauber, Fabrizio Sebastiani, and Ingo Frommholz. *Research and Advanced Technology for Digital Libraries 14th European Conference, ECDL 2010, Glasgow, UK, September 6-10, 2010. Proceedings*. Springer, September 2010.

[19] Ingo Frommholz, Keith van Rijsbergen, Fabio Crestani, and Mounia Lalmas. Towards a Geometrical Cognitive Framework. In Birger Larsen, Jesper Schneider, Fredrik Åström, and Balázs Schlemmer, editors, *The Janus Faced Scholar. A Festschrift in Honour of Peter Ingwersen*, pages 43–48. July 2010.

[20] Thomas Mandl and Ingo Frommholz. *Proceedings of the Workshop Information Retrieval 2009 (WIR 2009)*. 2009. Publication Title: Technology.

[21] Ulrich Thiel, Holger Brocks, Andrea Dirsch-Weigand, André Everts, Ingo Frommholz, and Adelheit Stein. Queries in Context: Access to Digitized Historic Documents in a Collaboratory for the Humanities. In Matthias Hemmje, Claudia Niettereé, and Thomas Risse, editors, *From Integrated Publication and Information Systems to Virtual Information and Knowledge Environments. Essays Dedicated to Erich J. Neuhold on the Occasion of His 65th Birthday*, pages 117–127. Springer, 2005.

Theses

[1] Ingo Frommholz. *A Probabilistic Framework for Information Modelling and Retrieval Based on User Annotations on Digital Objects*. PhD thesis, University of Duisburg-Essen, 2008.

[2] Ingo Frommholz. *Automatische Kategorisierung von Web-Dokumenten*. Diploma Thesis, University of Dortmund, January 2001.