

# CURRICULUM VITAE

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## Qualifications

**1993** Doctor of Computer Science and Mathematics  
*Katholieke Universiteit Nijmegen, The Netherlands*

**1989** Master of Science (*Cum Laude*)  
*Katholieke Universiteit Nijmegen, The Netherlands*

**1982** Bachelor of Science (Major: Computer Science)  
*University of Queensland, Brisbane, Australia*

## Memberships

- ACM-SIGIR (Association of Computing Machinery Specialist Interest Group in Information Retrieval)
- ACS (Australian Computer Society)
- ASIS (American Society for Information Science)

## Employment

<b>2006 -</b>	Professor of Information Technology <i>Queensland University of Technology, Australia</i>
<b>2001 - 2005</b>	Project Leader <i>Distributed Systems Technology Centre, Australia</i>
<b>1999 - 2000</b>	Senior Research Scientist <i>Distributed Systems Technology Centre, Australia</i>
<b>1994 - 1998</b>	Assistant Professor (tenured) <i>Queensland University of Technology, Australia</i>
<b>1992 - 1993</b>	Lecturer <i>Universiteit Utrecht, The Netherlands</i>
<b>1989 - 1992</b>	Researcher <i>Katholieke Universiteit Nijmegen, The Netherlands</i>
<b>1987 - 1989</b>	Scientific Programmer <i>Katholieke Universiteit Nijmegen, The Netherlands</i>
<b>1984 - 1987</b>	Database Analyst <i>Queensland Information Technology Pty. Ltd., Australia</i>
<b>1983 - 1984</b>	Database Programmer <i>Mount Isa Mines Holdings Ltd., Australia</i>
<b>1982 - 1983</b>	Technical Programmer <i>G.H.D Pty. Ltd., Australia</i>

## Visiting Professor and Adjunct Appointments

<b>2005 -</b>	Abductive Reasoning Group, Department of Philosophy <i>University of British Columbia, Canada</i>
<b>2001 - 2006</b>	Department of Computing Science <i>University of Glasgow, Scotland</i>

# RESEARCH

## Areas of investigation: past and present

My research lies within the intersection of information retrieval, applied logic and cognitive science:

- **Quantum Interaction**
  - Correspondence between semantic space models and quantum mechanics to formalize aspects of sub-symbolic logic in cognitive systems
- **Practical Logics of Cognitive Systems**
  - Computational models of socio-cognitive knowledge representation; associational and analogical reasoning in semantic space; analysis of the evolution of “meaning”
  - scientific discovery in semantic space models computed from biomedical literature; social network discovery from human electronic communication; discovery of explicit and tacit community knowledge
- **Information retrieval theory:**
  - Axiomatic theory for information retrieval; logics of “aboutness”; theoretical comparison of information retrieval models; probabilistic models of information retrieval.
  - Theory and operational models of information retrieval logics, e.g., based on belief revision, information flow, belief networks, preference logic of navigation, filtering and search.
- Cognitive- and user- based evaluation of internet search:
  - Process-oriented models of search; analysis of cognitive load within search
- Hypermedia- structure and navigation:
  - Stratified hypermedia structures; theory and practice of lattice structures for browsing hypermedia

## RESEARCH

### Extramural Funding

- “Automatic text classification: An evaluation”, *Looksmart*, 1998 (US\$3,000)
- “Query refinement in Patent Search: a pilot study”, with R. McArthur (DSTC), *United States Patents Office*, 1998-1999 (US\$96,000)
- “Integrating WebKB and the HyperIndex Browser”, with P. Eklund (Griffith Uni.) and P. Martin (Griffith Uni.), *National Security Agency*, 1999-2000 (US\$200,000)
- “Dynamic Taxonomic support for Educational Pathways”, *Education Australia - EdNA*, 2000 (AUD\$9,500)
- “Interactive query formulation”, *Queensland Health*, 2000 (AUD\$15,840)
- “Concept Learning and Structure Formation for Document Navigation”, with P. Eklund (Uni. Wollongong), D. Song (DSTC). *Australian Research Council Discovery Grant 2003-2005* (AUD\$211,035).
- “Automatic Discovery of Non-Obvious relationships between Named Entities”, with R. McArthur (DSTC), *Defence Science Technology Organization*, 2005 (AUD\$50,000)
- “Web Service Discovery by Abduction”, *SAP*, 2005 (AUD\$45,000)
- Total revenue of licensing research technology 1999-2005: approx. (AUD\$550,000)
- “Efficient similarity query processing in high dimensional databases”, with X. Zhou (Uni. Queensland), D. Song (Open University). *Australian Research Council Discovery Grant 2006-2008* (AUD\$210,000).
- “Service Ecosystems Management for Collaborative Process Improvement”, with M. Roseman (QUT), M. Dumais (QUT), A. Spink (QUT) *Australian Research Council Linkage Grant 2006-2009* (AUD\$258,920).
- “The Quantum Mechanics of Semantic Space”, with C.J. van Rijsbergen (University of Glasgow), S. Malin (Colgate University, U.K.) *Australian Research Council Discovery Grant 2007-2009* (AUD\$240,000).
- Partner investigator: EPSRC grant “Towards context-sensitive information retrieval based on quantum theory (EP/F01408/1: 2008-2011) with D. Song and S. Rueger (Open University, U.K.) and C.J. van Rijsbergen and M. Lalmas (University of Glasgow), (GBP 323,703)

### Editorial Board Appointments

- *Journal of Algorithms in Cognition, Informatics and Logic* (Elsevier)
- *Information Retrieval* (Springer)
- *Journal of Applied Logic* (Elsevier)
- *Information Science and Knowledge Management* book series (Springer)

## Invited Presentations

- “Semantic Space: Bridging the divide between cognitive science, information processing technology and quantum mechanics, The Third IEEE International Symposium on Information Technology, Kuala Lumpur, 26-29 August, 2008
- “The Quantum Mechanics of Semantic Space”, Data Ecologies 07, Linz, Austria, July 19-20, 2007
- “Quantum logic of semantic space: An exploratory investigation into context effects”. *Information Retrieval Research Festival*, University of Glasgow, 25th -30th July, 2005.
- “Ankle deep semantics: Augmenting ontologies with word clusters and instance information”, *EVOLVE: Web services conference*, Sydney, 2002

## In the media

- “The power of search”, *Sydney Morning Herald*, April 13, 2004
- “Search engine narrows the field”, *The Australian*, October 3, 2000
- “Surfer makes browsing the web easier”, *Business Queensland*, October 28, 1996

# TEACHING AND SUPERVISION

## Subject areas taught

- Databases and Information Systems
- Information Retrieval
- Knowledge-based Systems
- The Science of Information
- Organizational Databases

Formal teaching surveys average between 4 (“very good”) and 5 (“excellent”)

## Ph.D. supervision

- *An axiomatic theory for information retrieval* (Theo Huibers, Universiteit Utrecht, The Netherlands), 1995
- *Dynamic Scalable Resolution of Conceptual Heterogeneity in Distributed Information Systems* (Steve Milliner, Queensland University of Technology), 2000
- *Adaptive information filtering agents on the web* (Raymond Lau, Queensland University of Technology), 2003
- *Computing with Meaning by Operationalising Socio-Cognitive Semantics* (Robert McArthur, Queensland University of Technology), 2007
- *What is information?* (James Cole, University of Queensland), [2008]
- *Dual-control Information Retrieval* (Vitaliy Vitsentiy, Queensland University of Technology), [2009]
- *Discovery of Services supported by Semantics in a Service Ecosystem* (Christian Prokopp, Queensland University of Technology), [2009]

## REFEREES

Professor Keith van Rijsbergen  
Department of Computing Science  
University of Glasgow  
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Professor W. Bruce Croft  
Center for Intelligent Information Retrieval  
University of Massachusetts, Amherst  
`croft@cs.umass.edu`

Professor John H. Woods  
Department of Philosophy  
University of British Columbia and  
Charles S. Peirce Professor of Logic  
King's College London  
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Dr. Ross Wilkinson  
ICT Centre  
Commonwealth Scientific and Industrial Research Organisation  
`ross.wilkinson@csiro.au`

## References

### Edited Works

- [1] P.D. Bruza and M. Weeber. *Literature-based Discovery*. Information Science and Knowledge Management. Springer, 2008. (In press).
- [2] P.D. Bruza, W. Lawless, C.J. Van Rijsbergen, D. Sofge, B. Coecke, and S. Clark, editors. *Proceedings of the Second Quantum Interaction Symposium (QI-2008)*. College Publications, 2008.
- [3] P.D. Bruza, W. Lawless, C.J. van Rijsbergen, and D. Sofge, editors. *Quantum Interaction*. Association for the Advancement of Artificial Intelligence, AAAI Press, 2007.
- [4] P.D. Bruza, A Spink, and R. Wilkinson, editors. *Proceedings of the Eleventh Australasian Document Computing Symposium (ADCS 2006)*, Australia, 2006. Queensland University of Technology, Faculty of Information Technology. Published as a special issue of the Australian Journal of Intelligent Information Processing Systems (AJIIPS), vol 9, no. 2.
- [5] K. Järvelin, J. Allan, P.D. Bruza, and M. Sanderson, editors. *Proceedings of the Twenty-Seventh Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*. ACM Press, 2004.
- [6] P.D. Bruza, A. Turpin, and A. Moffat, editors. *Proceedings of the Ninth Australasian Document Computing Symposium ADCS 2004*. University of Melbourne, Australia, 2004.
- [7] P.D. Bruza and J. Thom, editors. *Proceedings of the Eighth Australasian Document Computing Symposium ADCS 2003*. CSIRO Mathematical and Information Sciences, Canberra, Australia, 2003.
- [8] P.D. Bruza and J. Thom, editors. *Proceedings of the Second Australasian Document Computing Symposium ADCS'97*. Royal Melbourne Institute of Technology, Australia, 1997.

### Book Chapters

- [9] P. Bruza, D. Widdows, and J. Woods. A Quantum Logic of Down Below. In K. Engesser, D. Gabbay, and D. Lehmann, editors, *Handbook of Quantum Logic and Quantum Structures*, volume 2. Elsevier, 2008. (In press).
- [10] D. Song, G. Cao, P.D. Bruza, and R. Lau. Concept induction via fuzzy c-means clustering on a high dimensional semantic space. In J. Valente de Oliveira and W. Pedrycz, editors, *Advances in Fuzzy Clustering and its Applications*. John Wiley and Sons, 2006. (In Press).
- [11] P. Bruza and R. Cole. Quantum Logic of Semantic Space: An Exploratory Investigation of Context Effects in Practical Reasoning . In S. Artemov, H. Barringer, A. S. d'Avila Garcez, L. C. Lamb, and J. Woods, editors, *We Will Show Them: Essays in Honour of Dov Gabbay*, volume 1, pages 339–361. London: College Publications, 2005.
- [12] R.M. McArthur and P.D. Bruza. Dimensional representations of knowledge in online community . In Y. Ohsawa and P. McBurney, editors, *Chance Discovery - Foundations and Applications*, volume XVI of *Advances in Information Processing*. Springer-Verlag, 2003.

- [13] R.M. McArthur and P.D. Bruza. Discovery of tacit knowledge and topical ebbs and flows within the utterances of online community. In Y. Ohsawa and P. McBurney, editors, *Chance Discovery - Foundations and Applications*, volume XVI of *Advances in Information Processing*. Springer-Verlag, 2003.
- [14] P.D. Bruza, D. Song, K.F. Wong, and C.H. Cheng. Commonsense Aboutness for Information Retrieval. In M. Mohammadian, editor, *Advances in Intelligent Systems: Theory and Applications*, volume 59 of *Frontiers in Artificial Intelligence and Applications*, pages 288–295. IOS Press, 2000.
- [15] P.D. Bruza and B. van Linder. Preferential Models of Query by Navigation. In F. Crestani, M. Lalmas, and C.J. van Rijsbergen, editors, *Information Retrieval: Uncertainty and Logics*, volume 4 of *The Kluwer International Series on Information Retrieval*. Kluwer Academic Publishers, 1998.
- [16] T.W.C. Huibers and P.D. Bruza. Situations: A general framework for studying Information Retrieval. In R. Leon, editor, *Information retrieval: New systems and current research*, pages 3–25. Taylor Graham, Drymen, Scotland, 1996.

### Journal Articles

- [17] R. Lau, P.D. Bruza, and D. Song. Towards a Belief Revision Based Adaptive and Context Sensitive Information Retrieval System. *ACM Transactions on Information Systems*, 26(2), 2008.
- [18] D. Widdows, P.D. Bruza, W. Lawless, C.J. van Rijsbergen, and D. Sofge. Quantum interaction. *AI Magazine*, 28(3):99–101, 2007.
- [19] R. Lau, D. Song, P.D. Bruza, K.F. Wong, and D. Chen. An adaptive information agent for document title classification and filtering in document-intensive domains. *Decision Support Systems*, 44:251–265, 2007.
- [20] J King, , P.D. Li, Y. Bruza, and R. Nayak. Preliminary investigations into ontology-based collection selection. *Australian Journal of Intelligent Information Processing Systems (AJIIPS)*, 9(2):33–40, 2006.
- [21] P.D. Bruza, R.J. Cole, Z. Abdul Bari, and D. Song. Towards operational abduction from a cognitive perspective. *Logic Journal of the IGPL*, 14(2):161–177, 2006.
- [22] A.B Barros, M. Dumas, and P.D. Bruza. The Move to Web Service Ecosystems. *BPTrends*, 3(12), 2005.
- [23] P.D. Bruza, D.W. Song, and R.M. McArthur. Abduction in semantic space: Towards a logic of discovery. *Logic Journal of the IGPL*, 12(2):97–110, 2004.
- [24] D.W. Song and P.D. Bruza. Towards context sensitive information inference. *Journal of the American Society for Information Science and Technology*, 54(3):321–334, 2003.
- [25] S. Dennis, P.D. Bruza, and R.M. McArthur. Web searching: A process oriented experimental study of three interactive search paradigms. *Journal of the American Society for Information Science and Technology*, 53(2):120–133, 2002.
- [26] K.F. Wong, D. Song, P.D. Bruza, and C.H. Cheng. Application of Aboutness to Functional Benchmarking in Information Retrieval. *ACM Transactions on Information Systems*, 19(4):337–370, 2001.

- [27] R. Lau, A. ter Hofstede, and P.D. Bruza. Maxi-adjustment and possibilistic deduction for adaptive information agents. *Journal of Applied Nonclassical Logic*, 11(2-3), 2001.
- [28] R. Lau, A. ter Hofstede, and P.D. Bruza. Belief Revision for Adaptive Information Filtering Agents. *International Journal of Cooperative Information Systems*, 10(1 - 2):57–79, 2001.
- [29] P.D. Bruza, D.W. Song, and K.F. Wong. Aboutness from a Commonsense Perspective. *Journal of the American Society for Information Science*, 51(12):1090–1105, 2000.
- [30] H.A. Proper and P.D. Bruza. What is information discovery about? *Journal of the American Society for Information Science*, 50(9):737–750, 1999.
- [31] M. Lalmas and P.D. Bruza. The Use of Logic in Information Retrieval Modeling. *Knowledge Engineering Review*, 13(3):263–295, 1998.
- [32] P.D. Bruza and T.W.C. Huibers. A Study of Aboutness in Information Retrieval. *Artificial Intelligence Review*, 10:1–27, 1996.
- [33] P.D. Bruza and L.C. van der Gaag. Index Expression Belief Networks for Information Disclosure. *International Journal of Expert Systems*, 7(2):107–138, 1994.
- [34] P.D. Bruza and Th.P. van der Weide. Stratified Hypermedia Structures for Information Disclosure. *The Computer Journal*, 35(3):208–220, 1992.
- [35] P.D. Bruza and Th.P. van der Weide. The Modelling and Retrieval of Documents using Index Expressions. *ACM SIGIR FORUM*, 25(2), 1991.
- [36] P.D. Bruza and Th.P. van der Weide. Assessing the Quality of Hypertext Views. *ACM SIGIR FORUM*, 24(3):6–25, 1990.

### Refereed Conference Presentations

- [37] P.D. Bruza, K. Kitto, D. Nelson, and C.L. McEvoy. Entangling words and meaning. In *Proceedings of the Second Quantum Interaction Symposium (QI-2008)*, pages 118–124. College Publications, 2008.
- [38] P.D. Bruza and J. Woods. Quantum collapse in semantic space: interpreting natural language argumentatio. In *Proceedings of the Second Quantum Interaction Symposium (QI-2008)*, pages 141–147. College Publications, 2008.
- [39] D. Song, Q. Huang, S. Rueger, and P.D. Bruza. Facilitating query decomposition in query language modeling by association rule mining using multiple sliding windows. In *Proceedings of ECIR'08*, 2008.
- [40] C. Goucai, J. Warren, R.M. McArthur, P.D. Bruza, D. Kralik, and K. Price. Understanding individual experiences of chronic illness with semantic space models of electronic discussions. In *Proceedings of the Twentieth IEEE International Symposium on Computer-Based Medical Systems*, pages 548–553. IEEE Computer Society, 2007.
- [41] Q. Huang, D. Song, S. Rueger, and P.D. Bruza. Learning and generation of an aspect hidden markov model for query language model generation. In *First International Conference on the Theory of Information Retrieval*, October 2007.
- [42] D. Widdows and P.D. Bruza. Quantum information dynamics and open world science. In P.D. Bruza, W. Lawless, C.J. van Rijsbergen, and D. Sofge, editors, *Quantum Interaction*, AAAI Spring Symposium Series. AAAI Press, 2007.

- [43] D. Song, P.D Bruza, R.M. McArthur, and T. Mansfield. Enabling Management Oversight in Corporate Blog Space. In *Computational Approaches to Analyzing Weblogs*, 2006. AAAI Spring Symposium Series, Stanford University, March 27-29.
- [44] D. Song and P.D. Bruza. Text-based Knowledge Discovery with Information Flow Analysis. In *Frontiers of WWW Research and Development - Proceedings of the 8th Asia Pacific Web Conference (APWeb 2006)*, volume 3481 of *Lecture Notes in Computer Science*, pages 692–701. Springer, 2006.
- [45] R.M. McArthur, P.D. Bruza, J. Warren, and D. Kralik. Projecting computational sense of self: A study of transition in a chronic illness online community. In *Proceedings of the 39th Hawaii International Conference on Systems Sciences*. IEEE Press, 2006.
- [46] Z. Huang, X. Zhou, D. Song, and P.D. Bruza. Dimensionality Reduction in Motif-Signature Based Protein Structure Matching. In *Proceedings of the 17th Australasian Database Conference (ADC 2006)*, pages 167–174. Australian Computer Society Inc., 2006.
- [47] J. Bai, D. Song, P.D. Bruza, J. Nie, and G. Cao. Query Expansion Using Term Relationships in Language Models for Information Retrieval. In *Proceedings of the 14th International Conference on Information and Knowledge Management (CIKM 2005)*, pages 688–695. ACM Press, 2005.
- [48] P.D. Bruza and R.J. Cole. A Bare Bones Approach to Literature-Based Discovery: An analysis of the Raynaud’s/fish-oil and migraine-magnesium discoveries in semantic space. In A. Hoffman, H. Motoda, and T. Scheffer, editors, *Discovery Science, 8th International Conference, DS 2005, Singapore, October 8-11, 2005, Proceedings*, volume 3735 of *Lecture Notes in Artificial Intelligence*, pages 84–98. Springer, 2005.
- [49] R. Lau, P.D. Bruza, and D. Song. Belief Revision for Adaptive Information Retrieval. In *Proceedings of the 27th Annual ACM Conference of Research and Development in Information Retrieval (SIGIR 2004)*, pages 130–137. ACM Press, 2004.
- [50] P. Cheong, D. Song, P.D. Bruza, and K.F. Wong. Information Flow Analysis with Chinese Text. In *Proceedings of the First International Joint Conference on Natural Language Processing (IJCNLP-04)*, pages 91–98. Asia Federation of Natural Language Processing, 2004.
- [51] G. Cao, D. Song, and P.D. Bruza. Fuzzy K-Means Clustering on a High Dimensional Semantic Space. In *Proceedings of the Sixth Asia Pacific Web Conference (APWeb 2004)*, volume 3007 of *Lecture Notes in Computer Science*, pages 95–101. Springer-Verlag, 2004.
- [52] D. Song, P.D Bruza, and R.J. Cole. Concept learning and information inference on a high-dimensional semantic space. ACM SIGIR 2004 Workshop on Mathematical/Formal Methods in Information Retrieval (MF/IR 2004), 2004.
- [53] D. Song, P. D. Bruza, Z. Huang, and R. Lau. Classifying document titles based on information inference. In *Proceedings of the 14th International Symposium on Methodologies for Intelligent Systems (ISMIS 2003)*, pages 297–306. Springer, 2003.

- [54] P. D. Bruza and D. Song. A Comparison of various approaches for using probabilistic dependencies in language modeling. In *Proceedings of the 26th Annual ACM Conference of Research and Development in Information Retrieval (SIGIR 2003)*, pages 419–420. ACM Press, 2003.
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- [56] R.M. McArthur and P.D. Bruza. Finding Tacit Knowledge in Online Communities. In Verburg, R.M and J.A. de Ridder, editors, *Proceedings of the Workshop on Knowledge Sharing under Distributed Circumstances*, pages 61–66. NWO-MES Press, 2003. ISBN 90-9017372-2.
- [57] P.D. Bruza and D. Song. Inferring Query Models by Computing Information Flow. In *Proceedings of the 11th International Conference on Information and Knowledge Management (CIKM 2002)*, pages 260–269. ACM Press, 2002.
- [58] P.D. Bruza and D. Song. Informational Inference via Information Flow. In A.M Tjoa and R.R Wagner, editors, *Twelfth International Workshop on Database and Expert Systems Applications (DEXA 2001)*, pages 237–241. IEEE Computer Society, 2001.
- [59] R.M. McArthur and P.D. Bruza. The ABC’s of Online Community. In *Proceedings of the First Asia Pacific conference on Web Intelligence: Research and Development*, volume 2198 of *Lecture Notes in Artificial Intelligence*, pages 141–147, Berlin, 2001. Springer.
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- [61] D.W. Song and P.D. Bruza. Discovering Information Flow using a High Dimensional Conceptual Space. In *Proceedings of the 24th Annual ACM Conference of Research and Development in Information Retrieval (SIGIR’2001)*, pages 327–333. ACM Press, 2001.
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- [63] R. Lau, A. H. M. Hofstede, and P. D. Bruza. Applying maxi-adjustment to Adaptive Information Filtering Agents. Proceedings of the 8th International Workshop on Non-Monotonic Reasoning (NMR’2000), 2000. <http://xxx.lanl.gov/html/cs.AI/0003073>.
- [64] R. Lau, A. H. M. Hofstede, and P. D. Bruza. Adaptive Profiling Agents for Electronic Commerce. Proceedings of the COLLECTeR(USA) 2000 - Conference on Electronic Commerce, 2000. [http://www.collector.org/past\\_collector.html](http://www.collector.org/past_collector.html).
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- [66] P.D. Bruza, S. Dennis, and R.M McArthur. Interactive internet search: keyword directory and query reformulation mechanisms compared. In *Proceedings of*

*the 23rd Annual ACM Conference of Research and Development in Information Retrieval (SIGIR'2000)*, pages 280–287. ACM Press, 2000.

- [67] R.M. McArthur and P.D. Bruza. The ranking of query refinements in interactive web-based retrieval. Proceedings of the Information Doors Workshop at the Hypertext 2000 Conference, 2000. [http://www.ics.mq.edu.au/einat/info\\_doors/program.html](http://www.ics.mq.edu.au/einat/info_doors/program.html).
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- [71] P.D. Bruza, D. Song, and K.F. Wong. Fundamental properties of Aboutness. In *Proceedings of the 22nd Annual ACM Conference of Research and Development in Information Retrieval (SIGIR'99)*, pages 277–278. ACM Press, 1999.
- [72] R. Lau, A. H. M. Hofstede, and P. D. Bruza. A Study of Belief Revision in the Context of Adaptive Information Filtering. In *Proceedings of the Fifth International Computer Science Conference (ICSC'99)*, volume 1749 of *Lecture Notes in Computer Science*, pages 1–10, Berlin, 1999. Springer.
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- [77] P.D. Bruza and B. van Linder. Preferential Models of Refinement Paths in Query by Navigation. IJCAI-97 Workshop on AI and Digital Libraries, Fifteenth International Joint Conference on Artificial Intelligence, 1997.

- [78] P.D. Bruza and B. van Linder. Model Preference Logic: Information retrieval via reasoning with preferences. In F. Crestani and M. Lalmas, editors, *Proceedings of the Second Workshop on Information Retrieval, Uncertainty and Logic WIRUL'96*, pages 17–20. University of Glasgow, Glasgow, Scotland, 1996. Technical Report TR-1996-29.
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- [80] P.D. Bruza. Intelligent Filtering using Nonmonotonic Inference. In *Proceedings of the 1st Australian Document Computing Symposium*, pages 1–7, Melbourne, Australia, March 1996. Department of Computer Science, RMIT.
- [81] S Willie and P.D. Bruza. User's Model of the Information Space: the case for two search models. In E.A. Fox, P. Ingwersen, and R. Fidel, editors, *Proceedings of the 18th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 205–211, Seattle, Washington, 1995. ACM Press.
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