

Curriculum Vitae

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<https://www.researchgate.net/profile/Andreas.Wichert>

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1 Teaching

1.1 Teaching Experience

- **Machine Learning**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (2 Sem. 18/19)
- Responsible for theoretical classes and practical classes, computer laboratory

- **Artificial Intelligence**

- BSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (1 Sem. 15/16, 18/19)
- Practical classes
- BSc in University of Cooperative Education, Heidenheim , Germany
- (1 Sem. 96/97, 97/98)
- Responsible for theoretical classes

- **Logic for Programming**

- BSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (2 Sem. 17/18)
- Practical classes

- **Decision Support Systems**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa

- (2 Sem. 05/06, 06/07, 07/08, 08/09, 09/10, 10/11, 11/12, 13/14, 14/15), (1 Sem. 15/16, 16/17, 17/18)
- Responsible for theoretical classes and computer laboratory

- **Symbolical and Sub-symbolical learning**

- PhD Program in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (2 Sem. 08/09, 09/10, 10/11, 11/12, 13/14, 14/15, 18/19),
- Responsible for theoretical classes

- **Intelligent Multimedia Databases**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (1 Sem. 06/07, 07/08, 08/09, 09/10, 10/11, 11/12, 13/14, 14/15)
- Responsible for theoretical classes and practical classes

- **Information and Computation for AI**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (1 Sem. 07/08, 09/10, 10/11, 11/12, 13/14, 14/15)
- Responsible for theoretical classes and practical classes

- **Algorithms**

- BSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (2 Sem. 06/07, 07/08, 08/09)
- Practical classes

- **Telemedicine**

- BSc in Medicine, Technical University Munich
- (2 Sem. 03/04, 04/05)
- Theoretical classes with Prof. Dr. H. Feussner

1.2 Teaching Innovation, new Proposed Courses

- **Intelligent Multimedia Databases**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa; introduced and developed by Andreas Wichert
- Based on the developed teaching material a book was published. The book is used in the course BIG DATA: INTELIGENCIA DE NEGOCIOS, Universidad de Valladolid, Spain

- **Information and Computation for AI**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa; introduced and developed by Andreas Wichert

- Based on the developed teaching a book was published. The book is used in Quantum computing I, II, HSE Tikhonov Moscow Institute of Electronics and Mathematics, Russia.

- **Symbolical and Sub-symbolical learning**

- PhD Program in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa; introduced and developed by Andreas Wichert
 - * Brings together sub-symbolical and symbolical approach
 - * Relation between statistical machine (biology) learning and symbolical AI (logic, psychology)

1.3 Pedagogical Publications

- R for Data Science

1.4 Students

1.4.1 Past PhD students supervision

1. **Luís Tarrataca**, *The Quantum Production System*, 2013
 - Full-time individual doctoral scholarship, awarded by the Fundação para a Ciência e Tecnologia
 - INESC-ID Award Young Researcher 2013
2. **Ângelo Cardoso**, *Hierarchical models for visual recognition*, 2013
 - Full-time individual doctoral scholarship, awarded by the Fundação para a Ciência e Tecnologia
3. **João Sacramento**, *Hierarchical associative memories and sparse codes*, 2014
 - Full-time individual doctoral scholarship, awarded by the Fundação para a Ciência e Tecnologia
 - Abreu Faro Prize honourable mention for the best PhD thesis (2013/2014) in Electrical Engineering, Applied Mathematics, Computer Science and Physics, 2015.
4. **Catarina Pinto Moreira**, *Quantum Probabilistic Graphical Models for Cognition and Decision*, 2017
 - Full-time individual doctoral scholarship, awarded by the Fundação para a Ciência e Tecnologia (15th out of 22 awarded applications in computer science in Portugal)

1.4.2 Current MSc Students

1. **Pedro Miguel Fonseca Vieira**, *Cerebellum Model for Movement Coordination*, MSc in Computer Science and Engineering
2. **Teodor Atroshenko**, *Sensor Fusion for Speech and Objects*, MSc in Computer Science and Engineering
3. **João Pedro Saldanha Campelo de Magalhães Crespo**, *Deep Learning and Checkers*, MSc in Computer Science and Engineering

4. **André Filipe Marques Mendes**, *Multiresolution Hopfield network*, MSc in Computer Science and Engineering
5. **Bruno Miguel Paiva Soalheira**, *Time Series Forecasting Using Wavelets and Deep Learning*, MSc in Computer Science and Engineering

1.4.3 Past MSc students

1. **Lus Gouveia Coutinho S Couto**, *Attention Network: steep learning curve in an invariant pattern recognition model*, MSc in Computer Science and Engineering, Feb. 2018
2. **Ricardo F. Ponciano**, *Multiresolution Deep Learning*, MSc in Computer Science and Engineering, Feb. 2018
3. **Miguel Ferreira de Sá Pedroso**, *Application of Machine Learning Techniques in Project Management Tools*, MSc in Computer Science and Engineering, Feb. 2017
4. **Pedro Araujo Rosa da Costa**, *Quantum Computation for Artificial Intelligence*, MSc in Computer Science and Engineering, Feb. 2017
5. **Francisco Manuel de Jesus Costa Ferreira**, *Modelo de Referência e Gestão da Arquitectura*, MSc in Computer Science and Engineering, Oct. 2016
6. **Nuno Andr Jeremias de Aniceto**, *Uma pesquisa sobre algoritmos de descrição de imagens*, MSc in Computer Science and Engineering, Oct. 2016
7. **Miguel Brito Franco**, *Categorical representation of seaman's knots*, MSc in Computer Science and Engineering, 2016
8. **Clara de Paiva**, *Hierarchical Associative Memories and Sparse Coding*, MSc in Computer Science and Engineering, 2016.
9. **Diogo André da Silva Romoão**, *Very Fast Image Retrieval*, MSc in Computer Science and Engineering (co-advised with João Dias Pereira), 2016
10. **Inês Aguiar Fernandes**, *Intelligent Binary Information Retrieval*, MSc in Computer Science and Engineering, 2015.
11. **José António dos Santos Rodrigues Leira**, *Associative Memory and Information Retrieval*, MSc in Computer Science and Engineering, 2015.
12. **Ana Karina Tavares de Moura Gomes**, *Fractal Dimension and the space filling curves*, MSc in Computer Science and Engineering, 2015.
13. **Daniela Filipa Pedro Fontes**, *Quantum Pirates - A Quantum Game - Theory Approach to The Pirate Game*, MSc in Computer Science and Engineering, 2014.
14. **Miguel Lobo Ferreira**, *Exact High-Dimensional Indexing*, MSc in Computer Science and Engineering, 2013
15. **André Miguel Felcio Monteiro**, *Content-Based Image Retrieval of Medical Images with Contour Recognition Algorithms*, MSc in Computer Science and Engineering, 2013

16. **Adriano de Assis Pinheiro Martins**, *What can be learnt from the use of Information and Communication Technologies (ICT) in SpecialNeeds Education (SNE) in the Netherlands? What suggestions can be made to improve the use of ICT on SNE in Portugal?*, MSc in Computer Science and Engineering, 2012 (co-advised with Toon Abcouwer)
17. **Diogo António Rendeiro da Silva**, *Taxonomical Associative Memory*, MSc in Computer Science and Engineering, 2011 (co-advised with João Sacramento)
 - Highest possible grade (20)
 - A journal paper was published
18. **João Aguiam**, *Specifying the Behaviour of Building Automation Systems*, MSc in Computer Science and Engineering, 2011 (co-advised with Paulo Jorge Fernandes Carreira)
19. **Ricardo Jorge Ferreira Nobre**, *Biologically Inspired Agent Simulation*, MSc in Computer Science and Engineering, 2011
20. **Frederico Miguel Palmeiro Relvas Pereira Fernandes**, *Técnicas de Visualização de Mapas Auto-Organizados*, MSc in Computer Science and Engineering, 2011
21. **Tiago José de Oliveira Jordão**, MSc in Computer Science and Engineering, *fMRI data analysis techniques and the self-organizing maps approach*, 2010
22. **Nuno Ricardo Antunes Ferreira**, MSc in Computer Science and Engineering, *Content Based Image Retrieval (CBIR) for Medical Images*, 2010
23. **André de Trigueiros Lucas**, MSc in Computer Science and Engineering, *iKelius - Media Recommendation System*, (co-advised with Bruno Martins), 2010
24. **Ricardo Miguel de Matos Vieira**, MSc in Computer Science and Engineering, *Fast Associative Memory*, 2009.
25. **António de Melo Franco Bebiano Correia**, MSc in Computer Science and Engineering, *Previso de sries temporais com redes neuronais*, 2009.
26. **Filipa Tavares Duarte Ramos**, MSc in Computer Science and Engineering, *Uma nova técnica para reconhecimento de padrões invariantes*, 2009.
27. **Ricardo Miguel Simoes Soeiro**, MSc in Computer Science and Engineering, *HIE: A standards-based distributed Healthcare Integration Engine*, 2009.
28. **André Filipe da Silva Verissimo**, MSc in Computer Science and Engineering, *Servidor Multimédia Baseado em Conteúdo para Artistas*, 2009.
29. **João António Rodrigues Sacramento**, MSc in Computer Science and Engineering, *Progressive retrieval on hierarchical associative memories*, 2009.
30. **João Nuno da Silva BernardinoMartins Severino**, (acompanhante: João Damásio, Link Consulting) *Open Source Business Intelligence*, defesa 2008.
31. **Licinia Pedro Monteiro** MSc in Computer Science and Engineering, , *Algoritmo Plug-in LVQ para Servidor SQL*, 2008.
32. **Pedro Arteaga Guerra**, MSc in Computer Science and Engineering, *Books Retrieval by Hierarchical Linear Subspace*, 2008.

33. **Pedro Miguel Nunes Santos**, MSc in Computer Science and Engineering, *Content Addressable Multimedia Database Server para Medicina*, 2008.
34. **Pedro Teixeira**, MSc in Computer Science and Engineering, *Content-Based Image Retrieval: Hierarchical Sub-space Search, Pattern and Sub-Pattern Recognition*, 2007.
35. **Mestrado Bolonha MEIC/IST de Ângelo Cardoso**, MSc in Computer Science and Engineering, *Time Delay Neocognitron*, 2007.

2 Research

2.1 Scientific Publications

2.1.1 Book publications

1. **Intelligent Big Multimedia Databases**, Andreas Wichert, *World Scientific*, 2015
2. **Principles of Quantum Artificial Intelligence**, Andreas Wichert, *World Scientific*, 2013 (*cited by 9*)

2.1.2 Edited Book

1. **Exploratory Analysis and Data Modeling in Functional Neuroimaging**, Eds: F. T. Sommer, A. Wichert, *MIT Press, Boston*, 2003. (*cited by 40*)

2.1.3 Book chapters

1. Andreas Wichert and Pedro Santos: **Fast multimedia querying for medical applications**, Eds. Claudia Plant and Christian Böhm, Chapter in **Database Technology for Life Sciences and Medicine**, *World Scientific*, August 2010
2. H. Feussner, D. Wilhelm, B. Detter, M. Rasmus, M. Raggi, A. Schneider, A. Wichert: **Technische und bauliche Voraussetzungen fuer zukuenftige Entwicklungen in der minimal-invasiven Chirurgie**, Chapter in *Krankenhaus der Zukunft (Hospital of the Future)*, Eds.: A. Thiede, H.J. Gassel, Kaden, 2006
3. V. Schmitt, A. Wichert, J. Grothe, F. T. Sommer: **The brain positioning software**, Chapter in: *A practical guide to neuroscience databases and associated tools*. Ed. R. Koetter, Kluwer, NY, 2003
4. Wichert A., **(Artificial Intelligence) Kuenstliche Intelligenz**, *Lexikon der Neurowissenschaften*, Band 2, Spektrum Akademischer Verlag, 2000

2.1.4 Journals

1. Andrzej Wichert, Principles of Quantum-like Evolution, *Open Systems & Information Dynamics*, Accepted (*IF 0.750*);
2. Luis Sa-Couto and Andreas Wichert, Attention Inspired Network: steep learning curve in an invariant pattern recognition model, *Neural Networks*, in Press (*IF 7.197*);

3. Catarina Moreira, Emmanuel Haven, Sandro Sozzo and Andreas Wichert, **The Dutch's Real World Financial Institute: Introducing Quantum-Like Bayesian Networks as an Alternative Model to deal with Uncertainty**, *PLOS ONE*, 13(12): e0207806, 2018 (*IF 2.806*);
4. Catarina Moreira and Andreas Wichert, **Are quantum-like Bayesian Networks More Powerful than Classical Bayesian Networks?**, *Journal of Mathematical Psychology*, 78: 86-95, 2018 (*IF 1.377*);
5. Catarina Moreira and Andreas Wichert, **Are Quantum Models for Order Effects Quantum?**, *International Journal of Theoretical Physics*, 56(12):4029-4046, 2017, IF 0.964
6. Catarina Moreira and Andreas Wichert, **Exploring the Relations Between Quantum-Like Bayesian Networks and Decision-Making Tasks with Regard to Face Stimuli**, *Journal of Mathematical Psychology*, 78: 86-95, 2017 (*IF 1.377*);
7. Andreas Wichert and Catarina Moreira, **Probabilities and Shannon's Entropy in the Everett Many-Worlds Theory**, *Frontiers in Physics: Interdisciplinary Physics*. 4:47, 2016 , dx.doi.org/10.3389/fphy.2016.00047
8. Andreas Wichert, Brain and Mind in Everett many-worlds, *Journal of Consciousness Exploration and Research*, 7(19): 817-822, 2016 ,
9. Andreas Wichert, **The Quantum Binding Problem in the Context of Associative Memory**, *PLOS ONE*, 11(9): e0162312, 2016 (*IF 2.806*);
10. Catarina Moreira and Andreas Wichert, **Quantum Probabilistic Models Revisited: the Case of Disjunction Effects in Cognition**, *Frontiers in Physics: Interdisciplinary Physics*, 4, 26, 2016 , doi:10.3389/fphy.2016.00026 (*New Journal*);
11. Andreas Wichert, **Artificial Intelligence and a Universal Quantum Computer**, *AI Communications*, 29(4): 537-543, 2016, doi:10.3233/AIC-160699 (*IF 0.654*);
12. Catarina Moreira and Andreas Wichert, **Quantum-Like Bayesian Networks for Modeling Decision Making**, *Frontiers in Psychology*, 7, 2016 doi:10.3389/fpsyg.2016.00011 (*IF 2.321*);
13. João Sacramento, Andreas Wichert and Mark CW van Rossum, **Energy efficient sparse connectivity from imbalanced synaptic plasticity rules**, *PLOS Computational Biology*, 11(6):e1004265, 2015 doi:10.1371/journal.pcbi.1004265 (*IF 4.542*);
14. Andreas Wichert and Catarina Moreira, **Projection Based Operators in l_p space for Exact Similarity Search**, *Fundamenta Informaticae, Annales Societatis Mathematicae Polonae*, 136 (4): 461-474, 2015 doi:10.3233/FI-2015-1166 (*IF 0.687*);
15. Catarina Moreira and Andreas Wichert, **The Synchronicity Principle Under Quantum Probabilistic Inferences**, *NeuroQuantology*, 13(1): 111-133, 2015 doi:10.14704/nq.2015.13.1.788 (*IF 0.586*);
16. Ângelo Cardoso and Andreas Wichert, **Noise tolerance in a Neocognitron like network**, *Neural Networks*, 49: 32-28, 2014 doi:10.1016/j.neunet.2013.09.007 (*IF 7.197*);

17. Catarina Moreira and Andreas Wichert, **Interference Effects in Quantum Belief Networks**, *Applied Soft Computing*, 25: 64-85, 2014
doi:10.1016/j.asoc.2014.09.008 (IF 3.541);
18. Diogo Rendeiro, João Sacramento, Andreas Wichert, **Taxonomical associative memory**, *Cognitive Computation*, 6(1): 45-65, 2014
doi:10.1007/s12559-012-9198-4 (IF 1.933);
19. Luís Tarrataca and Andreas Wichert, **Quantum Iterative Deepening with an application to the Halting problem**, *PLOS ONE*, 8(3) e57309, 2013
dx.plos.org/10.1371/journal.pone.0057309 (IF 2.806);
20. Catarina Moreira and Andreas Wichert, **Finding Academic Experts on a MultiSensor Approach using Shannon's Entropy**, *Expert Systems with Applications*, 40(14): 5740-5754, 2013
doi:10.1016/j.eswa.2013.04.001 (IF 3.296);
21. Ângelo Cardoso and Andreas Wichert, **Handwritten digit recognition using biologically inspired features**, *Neurocomputing*, 99: 575-589, 2013
doi:10.1016/j.neucom.2012.07.027 (IF 3.317);
22. Luís Tarrataca and Andreas Wichert, **Intricacies of Quantum Computational Paths**, *Quantum Information Processing*, 12(2): 1365-1378, 2013
doi:10.1007/s11128-012-0475-7 (IF 2.192)
23. Andreas Wichert, **Proto Logic and Neural Sub-Symbolic Reasoning**, *Journal of Logic and Computation*, Oxford Journals, 23(3): 627-643, 2013
doi:10.1093/logcom/exs010 (IF 0.909);
24. João Sacramento, Francisco Burnay, Andreas Wichert, **Regarding the temporal requirements of a hierarchical Willshaw network**, *Neural Networks*, 25: 84-93, 2012 doi:10.1016/j.neunet.2011.07.005 (IF 7.197);
25. Andreas Wichert and André Verissimo, **CBIR) with a Subspace-tree: Principal Component Analysis versus Averaging**, *Multimedia Systems*, 18(4): 283-293, 2012 doi:10.1007/s00530-011-0248-7 (IF 2.207);
26. João Sacramento and Andreas Wichert, **Binary Willshaw learning yields high synaptic capacity for long-term familiarity memory**, *Biological Cybernetics*, 106(2): 123-133, 2012 doi:10.1007/s00422-012-0488-4 (IF 1.716);
27. Ângelo Cardoso and Andreas Wichert, **Iterative random projections for high-dimensional data clustering**, *Pattern Recognition Letters*, 33(13): 1749-1755, 2012 doi:10.1016/j.patrec.2012.06.007 (IF 1.995);
28. Luís Tarrataca and Andreas Wichert, **A Quantum Production Model**, *Quantum Information Processing*, 1(1): 189-209, 2012 doi:10.1007/s11128-011-0241-2 (IF 2.192);
29. Andreas Wichert, **The Role of Attention in the Context of Associative Memory**, *Cognitive Computation*, 3 (1):311-320, 2011,
doi:10.1007/s12559-010-9064-1 (IF 3.441);
30. João Sacramento and Andreas Wichert, **Tree-like hierarchical associative memory structures**, *Neural Networks*, 24 (2): 143-147, 2011,
doi:10.1016/j.neunet.2010.09.012 (IF 7.197);

31. J. Silva, Luís Coheur, A.C. Mendes, A. Wichert, **From symbolic to sub-symbolic information in question classification**, *Artificial Intelligence Review*, 35 (2): 137-154, 2011, doi:10.1007/s10462-010-9188-4 (*IF 2.627*);
32. Luís Tarrataca and Andreas Wichert, **Tree Search and Quantum Computation**, *Quantum Information Processing*, 10 (4): 475-50, 2011, doi:10.1007/s11128-010-0212-z (*IF 2.192*);
33. Luís Tarrataca and Andreas Wichert, **Can Quantum Entanglement Detection Schemes Improve Search?**, *Quantum Information Processing*, 11 (1): 55-66, 2011, doi:10.1007/s11128-011-0231-4 (*IF 2.192*);
34. Luís Tarrataca and Andreas Wichert, **Problem solving and quantum computation**, *Cognitive Computation*, 3(4): 510-524, 2011 doi:10.1007/s12559-011-9103-6 (*IF 3.441*);
35. Andreas Wichert, Pedro Teixeira, Pedro Santos, Helena Galhardas, **Subspace tree: High dimensional multimedia indexing with logarithmic temporal complexity**, *Journal of Intelligent Information Systems*, 35 (3): 495-516, 2010, doi:10.1007/s10844-009-0104-9 (*IF 1.294*);
36. Cardoso A., Wichert A., **Neocognitron and the Map Transformation Cascade**, *Neural Networks*, 23 (1): 74-88, 2010, doi:10.1016/j.neunet.2009.09.004 (*IF 7.197*);
37. Santos P., Galhardas H., Wichert A. . **Panoramix: A Content-based Health Record System**, *Internal Journal of Computer Assisted Radiology and Surgery*: 4 (Supplement): 152, 2009 doi:0.1007/s11548-009-0317-y
38. Wichert A., **Sub-symbols and Icons**, *Cognitive Computation*, 1 (4): 342-347, 2009, doi:10.1007/s12559-009-9027-6 (*IF 3.441*);
39. Wichert A., Dias Pereira, J., Carreira, P., **Visual search light model for mental problem solving**, *Neurocomputing*, 71 (13-15):2806-2822, 2008, doi:10.1016/j.neucom.2007.08.019 (*IF 3.317*);
40. Wichert A., **Content-based image retrieval by hierarchical linear subspace method**, *Journal of Intelligent Information Systems*, 31 (1): 85-107, 2008, doi:10.1007/s10844-007-0041-4 (*IF 1.294*);
41. Andre O. Falcão, Thibault Langlois e Andreas Wichert, **Flexible kernels for RBF networks**, *Neurocomputing*, 69(16-18): 2356-2359, 2006, doi:10.1016/j.neucom.2006.03.006 (*IF 3.317*);
42. Marcos P., Seitz T., Bubb H., Wichert A. and Feussner H., **Computer simulation for ergonomic improvements in laparoscopic surgery**, *Applied Ergonomics*, 37(3): 251-258, 2006, doi:10.1016/j.apergo.2005.09.003 (*IF 1.866*)
43. Wichert A., **Cell Assemblies for Diagnostic Problem-Solving**, *Neurocomputing*, 69(7-9): 810-824, 2006, doi:10.1016/j.neucom.2005.04.008 (*IF 3.317*)

44. Schneider A., Wilhelm D., Bohn U., Wichert A., Feussner H., **A surgical telepresence system for intrahospital IT networks**, *Journal of Telemedicine and Telecare*, 11(8): 408-414, 2005 (*IF 2.008*)
45. Wichert A., **Associative Diagnose** *Expert Systems*, 22(1): 26-39, 2005, doi: 10.1111/j.1468-0394.2005.00291.x (*IF 1.180*)
46. Wichert A., **Associative Computer: a Hybrid Connectionistic Production System**, *Cognitive Systems Research*, 6(2): 111-144, 2005, doi:10.1016/j.cogsys.2004.03.007 (*IF 1.182*)
47. Wichert A. **Categorical Expert Systems**, *Expert Systems*, 21(1): 34-47, 2004, doi: 10.1111/j.1468-0394.2004.00261.x (*IF 1.180*)
48. Wichert A., **Learning of Associative Prediction by Experience**, *Neurocomputing*, 48(1-4):741-762, 2002, doi:10.1016/S0925-2312(01)00671-3 (*IF 3.317*);
49. Wichert A., Walter H., Gron G., Baune A., Grothe J., Wunderlich A., Sommer F.T.: **Detection of delay activity during a working memory task by explorative data analysis**, *NeuroImage*, Volume 13, Issue 6, Supplement 1, June 2001. doi:10.1016/S1053-8119(01)91625-8 (*IF 5.835*)
50. Wichert A., **Pictorial Reasoning with Cell Assemblies**, *Connection Science*, 13(1):1-42, 2001, doi:10.1080/05940090010022693 (*IF 0.867*);
51. Wichert A.: **Associative Computation, Thesis Abstract**, *Künstliche Intelligenz*, 1:72-73, 2001
52. Andreas Wichert, **A categorical expert system "Jurassic"**, *Expert Systems with Applications*, 19(3): 149-158, 2000, doi:10.1016/S0957-4174(00)00029-4 (*IF 3.296*);

2.1.5 Conferences and Workshops

1. Andreas Wichert and Catarina Moreira, **Balanced Quantum-Like Model for Decision Making**, In Proceedings of the 11th International Conference on Quantum Interactions, 2018
2. Catarina Moreira and Andreas Wichert, **Introducing Quantum-Like Influence Diagrams for Violations of the Sure Thing Principle**, In Proceedings of the 11th International Conference on Quantum Interactions, 2018
3. Catarina Moreira and Andreas Wichert, **Quantum-Like Bayesian Networks using Feynman's Path Diagram Rules**, In Proceedings of the 16th Vaxjo Conference on Quantum Theory: from Foundations to Technologie, 2017
4. Catarina Moreira and Andreas Wichert, **When to use Quantum Probabilities in Quantum Cognition? A Discussion**, In Proceedings of the 12th Biennial International Quantum Structures Association Conference, 2017
5. Catarina Moreira and Andreas Wichert, **The Relation Between Acausality and Interference in Quantum-Like Bayesian Networks**, In Proceedings of the 9th International Conference on Quantum Interactions, 2015
6. Andreas Wichert, **Product quantization for vector retrieval with no error**, Proceedings of International Conference on Enterprise Information Systems, Wroclaw, Poland (ICEIS), Volume 1: 87-92, 2012

7. Luís Tarrataca and Andreas Wichert, **Iterative Quantum Tree Search**, CiE 2012 - How the World Computes, 2012
8. Andreas Wichert, **Inference, ontologies and the pump of thought**, 12th Neural Computation and Psychology Workshop (NCPW12), World Scientific, 2011
9. Andreas Wichert, **Neural Sub-Symbolic Reasoning**, Proceedings of Seventh International Workshop on Neural-Symbolic Learning and Reasoning, Workshop at IJCAI-11: 2-7, 2011 (*cited by 2*);
10. Luís Tarrataca and Andreas Wichert, **A hierarchical sorting oracle**, Proceedings of Quantum Interactions 2011 - The Fifth International Quantum Interaction Symposium, Springer, 2011
11. Wichert A., **Inference, ontologies and the pump of thought**, 12th Neural Computation and Psychology Workshop (NCPW12), Juneo 2010, World Scientific, 2011
12. Wichert, A.: **Subspace tree CBIR**, 2009 International Workshop on Content-Based Multimedia Indexing Conference Proceedings, IEEE: 38-44, 2009
13. P. Carreira, H. Galhardas, J. Pereira, and A. Wichert, **On Handling One-to-Many Transformations in Relational Systems**, Volume 12 of Lecture Notes in Business Information Processing (LNBIP), pp. 121-134, Springer-Verlag. 2009
14. Wichert A.: **Image categorization and retrieval**, in CONNECTIONIST MODELS OF BEHAVIOUR AND COGNITION II Proceedings of the 11th Neural Computation and Psychology Workshop, World Scientific, 2009
15. Wichert, A.: **Subspace Indexing for Extremely High-Dimensional CBIR**, 2008 International Workshop on Content-Based Multimedia Indexing Conference Proceedings, IEEE: 330-338, 2008.
16. P. Carreira, H. Galhardas, J. Pereira, and A. Wichert: **One-to-many data transformation operations: Optimization and execution on an RDBMS**, Proceedings of the 9th International Conference on Enterprise Information Systems (ICEIS'2007) Database and Information Systems Integration Volume, June, 2007.
17. J. Traub, S. Wiesner, N. Navab, B. Olbrich, A. Wichert, H. Feussner: **Respiratory motion analysis: towards gated augmentation of the liver**, in Proc. CARS 2005, pp. 248-253, Elsevier, 2005
18. Schneider A., Wichert A., Wilhelm D., Bohn U., Feussner H.: **First clinical experience with a LAN-based telepresence system**, CARS 2004 , pp. 1344, Elsevier, 2004
19. A. Schneider, H. Hautmann, H. Barfuss, T. Pinkau, F. Peltz, H. Feussner, A. Wichert: **Real-time image tracking of a flexible bronchoscope**, in Proc. CARS 2004, pp. 753 - 757, Elsevier, 2004
20. A. Wichert, P. Marcos-Suarez, A. Vereczkei, T. Seitz, H. Bubb, H. Feussner: **Improvement of the ergonomic situation in the integrated operating room for laparoscopic operations**, in Proc. CARS 2004 , pp. 842 - 846, Elsevier, 2004

21. F. T. Sommer, J. A. Hirsch, A. Wichert, **Theories, data analysis and simulation models in neuroimaging - an overview**, Chapter in Exploratory analysis and data modeling in functional neuroimaging. Eds.: F.T. Sommer and A. Wichert, MIT Press, Boston, MA, 2002
22. A. Wichert, Birgit Abler, Jo Grothe, Henrik Walter, F. T. Sommer, **Exploratory analysis of event-related fMRI demonstrated in a working memory study**, Chapter in Exploratory analysis and data modeling in functional neuroimaging. Eds.: F.T. Sommer and A. Wichert, MIT Press, Boston, MA, 2002
23. A. Wichert: **Perception Oriented Representation in Problem Solving**, Proceedings of the seventh Neural Computation and Psychology Workshop Connectionist Models of Cognition and Perception, pp. 64-77, World Scientific, 2002
24. A. Wichert, H. Kestler, H. Walter, G. Groen, A. Baune, J. Grothe, A. Wunderlich, F. T. Sommer: **Explorative detection of delay activity during a working memory task**, in Proc. 4th Int. Conf on Neural Networks and Expert Systems in Healthcare NNESSMED 2001, pp. 266-271, Technical Educational Institute of Crete, Heraklion, 2001
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28. Wichert A.: **Associative Computation and Associative Prediction**, Proceedings of the sixth Neural Computation and Psychology Workshop Connectionist models of evolution, learning and development, pp. 283-292, Springer-Verlag 2001
29. Wichert A.: **Hierarchical Categorization in a Paleontological Research Database**, Proceedings of the ECAI WS "Foundations of connectionist-symbolic integration", Berlin, 2000
30. Talle B., Wichert A. : **Audio-visual Sensorfusion with Neural Architectures**, Proceedings of the AVSP'1999 workshop, 1999
31. Wichert A. and Kestler H.A.: **A Categorical Based Reanimation Expert System**. Proceedings of the International Conference on Neural Networks and Expert Systems in Medicine and Healthcare , Pisa, Italy, pp. 187-193, World Scientific, 1998.
32. Wichert A.: **Hierarchical Categorization**. Proceedings of the MAICS'1998 workshop, pp. 141-148, AAAI Press, 1998
33. Krone G., Talle B., Wichert A., Palm G.: **Neural Architectures for Sensorfusion in Speechrecognition**, Proceedings of the AVSP' 1997 workshop, 1997

34. Kemke C., Wichert A.: **Hierarchical Self-Organizing Feature Maps for Speech Recognition.**, Proceedings World Congress on Neural Networks 1993, Vol. III, pp.45-47, Lawrence Erlbaum, 1993
35. Wichert, A.: **MTCn-Nets**, Proceeding World Congress on Neural Networks 1993, Vol.IV, pp.59-62, Lawrence Erlbaum, 1993

2.2 Projects

2.2.1 Leading projects

- HEIDI (HEIGH Dimensional Indexing) or how to index one billion of vectors
 - Ref. (PTDC/EIA-CCO/119722/2010)
 - 2012 to 2014.
 - Members: Andreas Wichert (Responsável), Angelo Cardoso, João Sacramento, Catarina Pinto Moreira.
 - Project was **cross-linked** with the discipline **Intelligent Multimedia Databases**

2.2.2 Participating in projects

- Project SMARTIS - Smarter Indexing and Search Schemes
 - Ref. (PTDC/EIA-EIA/115346/2009)
 - 2011 to 2013
 - Members: Pvel Pereira Calado (Leader), Helena Sofia Andrade Nunes Pereira Pinto, Andreas Wichert, Bruno Emanuel da Graa Martins, Lus Miguel Gomes dos Santos Reis Leito, Ivo Miguel da Quinta Anastcio,
- LIREC: Living with Robots and IntEractive Companions
 - Ref. (FP7-215554)
 - 2008 to 2012
 - Institutions: INESC-ID (ProfAndreasAna Paiva), Swedish Institute of Computer Science, Wroclaw University of Technology, Eötvös Loránd University, Otto-Friedrich Universität Bamberg, Heriot-Watt University, The University of Hertfordshire, Queen Mary University London (Coordinator), FoAM, Cnotinfor Ltd.
 - INESC-IID members : Ana Maria Severino de Almeida e Paiva, João Miguel de Sousa de Assis Dias, Carlos António Roque Martinho, Mário Rui dos Santos Gomes, Marco Paulo de Sousa Correia Vala, Andreas Wichert.
- Projects outside Portugal
 - KKF “Intelligente Workflow-Analyse und -Prädiktion bei minimal-invasiven chirurgischen Eingriffen (IWAP)”, Miti, Technical University Munich. (2005)
 - BFS “Interdisziplinärer Krankheitsorientierter Interventionsarbeitsplatz”, Miti, Technical University Munich. (2003 - 2005)
 - High-Tech-Offensive Bayern “Trauma-Minimierung durch minimal-invasive Technologien”, Miti, Technical University Munich. (2003 - 2004)

- SFB-527, University of Ulm. (1997 - 1998)
- LFS, University of Ulm. (1994 - 1996)
- Verbmobil, DFKI. (1992 - 1993)

2.3 Awards

2.3.1 Teaching Awards

- Excellence result in teaching for Decision Support Systems 14/15 and Intelligent Multimedia Databases 14/15

2.3.2 Scientific Awards

- Nominated for 2014 INESC-ID researcher award
- Nominated for 2013 INESC-ID researcher award
- Nominated for 2012 INESC-ID researcher award
- Postdoctoral Scholarship funded by Fundação para Ciência e Tecnologia, Lisboa, Portugal, 2005

2.4 Reviewing Activities

- In the past five years have served as a referee for *Transactions on Neural Networks and Learning Systems* (IEEE), *Neural Networks* (Elsevier), *Expert Systems with Applications* (Elsevier), *Neurocomputing* (Elsevier), *Quantum Information Processing* (Springer), *zbMATH*, *PLoS ONE* and *Mathematical Reviews*
- In the past five years have served as a referee for the conferences International Conference on Neural Computation, Valencia (ICNC 2010), Spain and International Joint Conference on Artificial Intelligence, Barcelona, Catalonia, Spain (IJCAI 2011).

2.5 Program committee of workshop

- **RECPAD 2018**, 24h edition of Portuguese Conference on Pattern Recognition. Member of the technical committee
- **RECPAD 2017**, 23h edition of Portuguese Conference on Pattern Recognition. Member of the technical committee
- **RECPAD 2015**, 21h edition of Portuguese Conference on Pattern Recognition. Member of the technical committee
- **RECPAD 2014**, 20th edition of Portuguese Conference on Pattern Recognition. Member of the technical committee
- **Inforum 09**, Simpósio de Informática, Universidade de Lisboa, Portugal;
- **CIKM 08**, Conference on Information and Knowledge Management, Napa Valley, USA;
- **CIKM 07**, Conference on Information and Knowledge Management, Lisbon, Portugal;

- **KUPA 07**, First International Workshop on Knowledge Management and Discovery for Ubiquitous and Pervasive Applications, 2007, Regensburg, Germany;
- **NIPS 2000**, workshop: Explorative analysis and data modelling in functional neuroimaging.

3 Knowledge Transfer

3.1 Industrial Cooperation

- Microsoft, cooperation project August 2010 - April 2011
- Accenture, MSc thesis

3.2 Service to the scientific community

3.2.1 Jury member of the PhD defence

1. External jury member of the PhD defence *Robust and interpretable classification models for molecular high-throughput data* of Florian Schmid at Ulm University, 2016.
2. External jury member of the PhD defence *Face and object recognition by 3D cortical representations* of Jaime Afonso do Nascimento Carvalho Martin Júnior at Universidade do Algarve, 2014.
3. Jury member of the PhD defence *Thesaurus-based Approach to 3D Shape Retrieval* of Alfredo Manuel dos Santos Ferreira Júnior at Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa, 2009.

3.2.2 Jury member of the Ms defence

1. Em 2016 participei no júri de Mestrado no IST, de Francisco Matos que defendeu tese intitulada: *Deep Learning for Computed Tomography*, cujo orientador científico foi o Prof. Doutor Diogo R. Ferreira do DEI/IST.
2. Em 2012 participei no júri de Mestrado no IST, de Diana Soares que defendeu tese intitulada: *Time Sequence Analysis*, cujo orientador científico foi o Prof. Doutor Diogo R. Ferreira do DEI/IST.
3. Em 2012 participei no júri de Mestrado no IST, de Diogo Simes que defendeu tese intitulada: *Active learning by imitation using the NAO robotic platform*, cujo orientador científico foi o Prof. Francisco A. C. Saraiva De Melo do DEI/IST.
4. Em 2011 participei no júri de Mestrado no IST, de Diana Soares que defendeu tese intitulada: *Time Sequence Analysis*, cujo orientador científico foi o Prof. Doutor Diogo R. Ferreira do DEI/IST.
5. Em 2011 participei no júri de Mestrado no IST, de Raul Miguel da Silva Martins que defendeu tese intitulada: *Where is my Information?*, cujo orientador científico foi o Prof. João Dias Pereira do DEI/IST.
6. Em 2011 participei no júri de Mestrado no IST, de Miguel Rocha Ferreira Aguiar Nogueira que defendeu tese intitulada: *Sistema de Submissão e Avaliação Automático de Projectos*, cujo orientador científico foi o Prof. João Dias Pereira do DEI/IST.

7. Em 2009 participei no júri de Mestrado no IST, de Hugo Miguel Claro Pinto que defendeu tese intitulada: *Robotized Microscopy*, cujo orientador científico foi o Prof. João Miguel Raposo Sanches do DEEC/IST.
8. Em 2009 participei no júri de Mestrado no IST, de Francisco Rebelo e Fernandes Costa que defendeu a tese intitulada: *ND-Tree: Estrutura e Indexação Multidimensional*, cujo orientador científico foi o Prof. Manuel João de Fonseca do DEI/IST.
9. Em 2009 participei no júri de Mestrado no IST, de Pedro Miguel dos Santos Martins que defendeu a tese intitulada: *Extracção e Avaliação de Fluxo de Processos*, cujo orientador científico foi o Prof. Diogo R. Ferreira do DEI/IST.
10. Em 2009 participei no júri de Mestrado no IST, de André Miguel Silverinha Portela que defendeu a tese intitulada: *Inferência de Contexto para Aplicações Móveis*, cujo orientador científico foi o Prof. Diogo R. Ferreira do DEI/IST.
11. Em 2009 participei no júri de Mestrado no IST, de Gabriel Martins Veiga que defendeu a tese intitulada: *Developing Process Mining Tools*, cujo orientador científico foi o Prof. Diogo R. Ferreira do DEI/IST.
12. Em 2008 participei no júri de Mestrado no IST, de Luís Domingues Tomé Jardim Tarratace que defendeu a tese intitulada: *A Gesture Recognition System using Smartphones*, cujo orientador científico foi o Prof. João M.P. Cardoso do DEI/IST.
13. Em 2008 participei no júri de Mestrado na FCUL, de Marco Filipe da Silva Mesquita que defendeu a tese intitulada: *An Approach to the Clustering of Correlated Data*, cujo orientador científico foi o Prof. André O. Falcão da DI/FCUL.
14. Em 2008 participei no júri de Mestrado no IST, de Nuno Ricardo de Carvalho Pimenta que defendeu a tese intitulada: *Photofinder 2: Classificação e Pesquisa de Fotografias Digitais*, cujo orientador científico foi o Prof. Manuel João de Fonseca do DEI/IST.
15. Em 2007 participei no júri de Mestrado no IST, de Pedro Barbosa Sequeira que defendeu a tese intitulada: *Learning to Interact: Connecting Perception with Action in Virtual Environments*, cuja orientadora científica foi a Profa. Ana Paiva do DEI/IST.
16. Em 2007 participei no júri de Mestrado no IST, de Mauro Santos que defendeu a tese intitulada: *Design of a Database System for Electronic Data Capture in Clinical Trials*, cujo orientador científico foi o Prof. Pável Calado do DEI/IST.
17. Em 2007 participei no júri de Mestrado no IST, de Miguel Almeida que defendeu a tese intitulada: *Design and Evaluation of an Interface Used in an Electronic Data Capture System for Clinical Trials*, cujo orientador científico foi o Prof. Pável Calado do DEI/IST.
18. Em 2007 participei no júri de Mestrado no IST, de Pedro Alexandre da Silva Nunes que defendeu a tese intitulada: *Dashboard de Gestão Operacional em Operadores de Transportes*, cuja orientadora científica foi a Profa. Helena Galhardas do DEI/IST.
19. Em 2006 participei no júri de TFC no IST, de André Martins Maurício que defendeu a tese intitulada: *Integração da informação proveniente do sistema TrainOffice no Data Warehouse da CP*, cujo orientador científico foi o Prof. Arlindo L. Oliveira do DEI/IST.

4 University Management Tasks

- January 2011 - January 2013: Scientific representative for Erasmus and PALOP (DEI)

5 Education

- PhD in Computer Science, July 2000 Department of Neural Information Processing University of Ulm, Germany.
 - Thesis: Associative Computation, (*cited by 10*)
- Bachelor of Philosophy, January 1999 Humboldt Studienzentrum University of Ulm, Germany.
 - Thesis: Postmoderne und Auschwitz
- Diploma of Computer Science, April 1993 Department of Artificial Intelligence University of Saarland, Germany.
 - Thesis: Conception and Implementation of Hierarchical Self-Organizing Feature Maps through MTC-Model for Speech Recognition

6 Research Experience

- Departamento de, Universidade de Lisboa (DEI-IST), Professor Auxiliar. (February 2006 - present)
- Departamento de Informatica, Faculdade de Ciências da Universidade de Lisboa, Postdoctoral Scholarship funded by Fundação para Ciência e Tecnologia, Lisboa, Portugal. (April 2005 - January 2006)
- Miti research group, Klinikum rechts der Isar, Technical University Munich, Scientific Director. (August 2003 - March 2005)
- Researcher at an interdisciplinary group, Department of Psychiatry III and the Department of Neural Information Processing, University of Ulm. (2000 - 2001)
- Lecturer, University of Cooperative Education, Heidenheim, Germany. (1997-1998)
- Researcher at the Department of Neural Information Processing, University of Ulm. (1994-1999)
- Work in surveyor's office, Ravensburg, Germany. (1993 - 1994)
- Community service: Care for alcoholic homeless men in Munich. (1985 - 1986)

7 Experience outside Academia

- F&K Delvotec, Munich, Research and Development, manager of the software group. (July 2002 - September 2003)
- Betaresearch, Munich, software architecture with Oracle link-up. (2002)

- DaimlerChrysler Research and Technology Speech Recognition Group, Ulm, Germany. (1999 - 2000)
- Work in surveyor's office, Ravensburg, Germany. (1993 - 1994)
- Community service: Care for alcoholic homeless men in Munich. (1985 - 1986)