

Curriculum Vitae

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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, 19/20, 20/21)
- Responsible for theoretical classes and practical classes, computer laboratory

- **Machine Learning**

- BSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (1 Sem 21/22)
- Responsible for theoretical classes and practical classes, computer laboratory

- **Deep Learning**

- MSc in Department of Computer Science and Engineering, Instituto Superior Técnico, Universidade de Lisboa
- (1 Sem 21/22)
- Practical classes

- **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, 19/20, 20/21, 21/22)
 - 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

- **Machine Learning**

- 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.

- **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.

- **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 teaching a book was published.

- **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 Current PhD students

1. **Luís Gouveia Coutinho Sá Couto**, Attention based Deep Learning for object recognition
2. **Teodor Atroshenko**, Image Classification with Deep Learning

1.4.2 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)

1.4.3 Current MSc Students

1. **Ines Margarida Caetano Correia** *Letter Spirit and Machine Learning*, MSc in Computer Science and Engineering
2. **Nuno Miguel de Melo Laranjo** *Deep Radial Basis Function Networks*, MSc in Computer Science and Engineering
3. **Miguel Almeida** *Analyzing the Double-descent Curve in Deep Learning* , MSc in Computer Science and Engineering
4. **Miguel Ramos** *Helmholtz Machine and Cognitive Science*, MSc in Computer Science and Engineering
5. **Catarina Ferreira Custódio** *Multiresolution Hopfield network*, MSc in Computer Science and Engineering

1.4.4 Past MSc students

1. **Rodrigo Simas** *Multi-Modal Associative Memory: A framework for Artificial Intelligence*, MSc in Computer Science and Engineering, April 2022
2. **Maria Osorio** *Stochastic Models for Sparse Codes*, MSc in Computer Science and Engineering,
3. **Bruno Miguel Junceiro Sousa** *Convolutional Neural Networks versus Feature Extraction*, MSc in Computer Science and Engineering, June 2021
4. **Pedro Miguel Fonseca Vieira**, *Cerebellum Model for Movement Coordination*, MSc in Computer Science and Engineering, June 2020
5. **Teodor Atroshenko**, *Using Sensor Fusion for Parallel Image Classification - With non-uniform data sampling and distributed computations*, MSc in Computer Science and Engineering, Nov. 2019
6. **João Pedro Saldanha Campelo de Magalhães Crespo**, *Reinforcement Learning for Two-Player Zero-Sum Games*, MSc in Computer Science and Engineering, Nov. 2019
7. **Bruno Miguel Paiva Soalheira**, *Time Series Forecasting Using Wavelets and Deep Learning*, MSc in Computer Science and Engineering, Nov 2019
8. **Pedro Filipe da Costa Dias Soares**, *Importance of Unimportant Words for Authorship Identification*, MSc in Computer Science and Engineering, June 2019

9. **Lus Gouveia Coutinho S Couto**, *Attention Network: steep learning curve in an invariant pattern recognition model*, MSc in Computer Science and Engineering, Feb. 2018
10. **Ricardo F. Ponciano**, *Multiresolution Deep Learning*, MSc in Computer Science and Engineering, Feb. 2018
11. **Miguel Ferreira de Sá Pedroso**, *Application of Machine Learning Techniques in Project Management Tools*, MSc in Computer Science and Engineering, Feb. 2017
12. **Pedro Araujo Rosa da Costa**, *Quantum Computation for Artificial Intelligence*, MSc in Computer Science and Engineering, Feb. 2017
13. **Francisco Manuel de Jesus Costa Ferreira**, *Modelo de Referência e Gestão da Arquitectura*, MSc in Computer Science and Engineering, Oct. 2016
14. **Nuno Andr Jeremias de Aniceto**, *Uma pesquisa sobre algoritmos de descrição de imagens*, MSc in Computer Science and Engineering, Oct. 2016
15. **Miguel Brito Franco**, *Categorical representation of seaman's knots*, MSc in Computer Science and Engineering, 2016
16. **Clara de Paiva**, *Hierarchical Associative Memories and Sparse Coding*, MSc in Computer Science and Engineering, 2016.
17. **Diogo André da Silva Romoão**, *Very Fast Image Retrieval*, MSc in Computer Science and Engineering (co-advised with João Dias Pereira), 2016
18. **Inês Aguiar Fernandes**, *Intelligent Binary Information Retrieval*, MSc in Computer Science and Engineering, 2015.
19. **José António dos Santos Rodrigues Leira**, *Associative Memory and Information Retrieval*, MSc in Computer Science and Engineering, 2015.
20. **Ana Karina Tavares de Moura Gomes**, *Fractal Dimension and the space filling curves*, MSc in Computer Science and Engineering, 2015.
21. **Daniela Filipa Pedro Fontes**, *Quantum Pirates - A Quantum Game - Theory Approach to The Pirate Game*, MSc in Computer Science and Engineering, 2014.
22. **Miguel Lobo Ferreira**, *Exact High-Dimensional Indexing*, MSc in Computer Science and Engineering, 2013
23. **André Miguel Felcio Monteiro**, *Content-Based Image Retrieval of Medical Images with Contour Recognition Algorithms*, MSc in Computer Science and Engineering, 2013
24. **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)
25. **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
26. **João Aguiam**, *Specifying the Behaviour of Building Automation Systems*, MSc in Computer Science and Engineering, 2011 (co-advised with Paulo Jorge Fernandes Carreira)
 27. **Ricardo Jorge Ferreira Nobre**, *Biologically Inspired Agent Simulation*, MSc in Computer Science and Engineering, 2011
 28. **Frederico Miguel Palmeiro Relvas Pereira Fernandes**, *Técnicas de Visualização de Mapas Auto-Organizados*, MSc in Computer Science and Engineering, 2011
 29. **Tiago José de Oliveira Jordão**, MSc in Computer Science and Engineering, *fMRI data analysis techniques and the self-organizing maps approach*, 2010
 30. **Nuno Ricardo Antunes Ferreira**, MSc in Computer Science and Engineering, *Content Based Image Retrieval (CBIR) for Medical Images*, 2010
 31. **André de Trigueiros Lucas**, MSc in Computer Science and Engineering, *iKelius - Media Recommendation System*, (co-advised with Bruno Martins), 2010
 32. **Ricardo Miguel de Matos Vieira**, MSc in Computer Science and Engineering, *Fast Associative Memory*, 2009.
 33. **António de Melo Franco Bebiano Correia**, MSc in Computer Science and Engineering, *Previsão de séries temporais com redes neuronais*, 2009.
 34. **Filipa Tavares Duarte Ramos**, MSc in Computer Science and Engineering, *Uma nova técnica para reconhecimento de padrões invariantes*, 2009.
 35. **Ricardo Miguel Simoes Soeiro**, MSc in Computer Science and Engineering, *HIE: A standards-based distributed Healthcare Integration Engine*, 2009.
 36. **André Filipe da Silva Verissimo**, MSc in Computer Science and Engineering, *Servidor Multimédia Baseado em Conteúdo para Artistas*, 2009.
 37. **João António Rodrigues Sacramento**, MSc in Computer Science and Engineering, *Progressive retrieval on hierarchical associative memories*, 2009.
 38. **João Nuno da Silva Bernardino Martins Severino**, (acompanhante: João Damásio, Link Consulting) *Open Source Business Intelligence*, defesa 2008.
 39. **Licínia Pedro Monteiro** MSc in Computer Science and Engineering, *Algoritmo Plug-in LVQ para Servidor SQL*, 2008.
 40. **Pedro Arteaga Guerra**, MSc in Computer Science and Engineering, *Books Retrieval by Hierarchical Linear Subspace*, 2008.
 41. **Pedro Miguel Nunes Santos**, MSc in Computer Science and Engineering, *Content Addressable Multimedia Database Server para Medicina*, 2008.
 42. **Pedro Teixeira**, MSc in Computer Science and Engineering, *Content-Based Image Retrieval: Hierarchical Sub-space Search, Pattern and Sub-Pattern Recognition*, 2007.
 43. **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. **Machine Learning - A Journey to Deep Learning**, Andreas Wichert and Luis Sa-Couto, *World Scientific*, 2021
2. **Principles of Quantum Artificial Intelligence: Quantum Problem Solving and Machine Learning, 2nd Edition**, Andreas Wichert, *World Scientific*, 2020
3. **Intelligent Big Multimedia Databases**, Andreas Wichert, *World Scientific*, 2015
4. **Principles of Quantum Artificial Intelligence**, Andreas Wichert, *World Scientific*, 2013

2.1.2 Edited Book

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

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. Luis Sa-Couto and Andreas Wichert, “What-Where” sparse distributed invariant representations of visual patterns, *Neural Computing and Applications*, 1-8, 2022
2. Luis Sa-Couto and Andreas Wichert, Simple convolutional based models: are they learning the task or the data?, *Neural Computation*,1(17) , 2021
3. Andreas Wichert, Quantum-Like Sampling, *Mathematics*, 9(17) : 2036, 2021
4. Andreas Wichert, Quantum-like Gaussian Mixture Model, *Soft Computing*, 25: 10067-10081, 2021

5. Andreas Wichert, **Quantum Cognition and the Mind**, *Journal of Artificial Intelligence and Consciousness*, 08 (1): 161-170, 2021
6. Catarina Moreira, Prayag Tiwari, Hari Mohan Pandey, Peter Bruza, and Andreas Wichert, **Quantum-Like Influence Diagrams for Decision-Making**, *Neural Networks*, 132:190-210, 2020, (IF 7.197, Q1);
7. Joao Crespo and Andreas Wichert, **Reinforcement learning applied to games**, *SN Applied Sciences* 2, 1-16, 2020
8. Andreas Wichert, Catarina Moreira, Peter Bruza, **Balanced Quantum-Like Bayesian Networks**, *Entropy*, 22(2):170, 2020, (IF 2.41, Q2);
9. Luis Sa-Couto and Andreas Wichert, **Storing object dependent sparse codes in a Willshaw associative network**, *Neural Computation*, 32(1):136-152, 2020, (IF 2.261, Q1);
10. Catarina Moreira, Lauren Fella, Shahram Dehdashti, Peter Bruza, Andreas Wichert, **Towards a Quantum-Like Cognitive Architecture for Decision-Making**, *Behavioral and Brain Sciences*, Accepted (IF 15.071, Q3);
11. Andrzej Wichert, **Principles of Quantum-like Evolution**, *Open Systems & Information Dynamics*, 26(2), 2019: 2019 (IF 1.231, Q2);
12. Luis Sa-Couto and Andreas Wichert, **Attention Inspired Network: steep learning curve in an invariant pattern recognition model**, *Neural Networks*, 114: 38-46. 2019 (IF 7.197, Q1);
13. Catarina Moreira, Emmanuel Haven, Sandro Sozzo and Andreas Wichert, **Process mining with real world financial loan applications: Improving inference on incomplete event logs**, *PLOS ONE*, 13(12): e0207806, 2018 (IF 2.766, Q1);
14. 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 2.176, Q1);
15. Catarina Moreira and Andreas Wichert, **Are Quantum Models for Order Effects Quantum?**, *International Journal of Theoretical Physics*, 56(12):4029-4046, 2017, (IF 0.968, Q3);
16. 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 2.176, Q1);
17. 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 (IF 1.895, Q2);
18. Andreas Wichert, **Brain and Mind in Everett many-worlds**, *Journal of Consciousness Exploration and Research*, 7(19): 817-822, 2016,
19. Andreas Wichert, **The Quantum Binding Problem in the Context of Associative Memory**, *PLOS ONE*, 11(9): e0162312, 2016 (IF 2.766, Q1);

20. 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 (IF 2.176, Q2);
21. Andreas Wichert, **Artificial Intelligence and a Universal Quantum Computer**, *AI Communications*, 29(4): 537-543, 2016, doi:10.3233/AIC-160699 (IF 0.461);
22. 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 3.394, Q1);
23. 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 3.955, Q1);
24. 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 0.725, Q3);
25. 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 0.453, Q4);
26. 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, Q1);
27. 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 3.907, Q1);
28. Diogo Rendeiro, João Sacramento, Andreas Wichert, **Taxonomical associative memory**, *Cognitive Computation*, 6(1): 45-65, 2014 doi:10.1007/s12559-012-9198-4 (IF 3.479, Q1);
29. 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 2.766, Q1);
30. 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 3.768, Q1);
31. 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 3.241, Q1);
32. 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 2.283, Q1)

33. 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 0.740, Q2);
34. 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, Q1);
35. 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 1.703, Q1);
36. 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 1.440, Q1);
37. 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 1.952, Q1);
38. 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 2.283, Q1);
39. 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 3.479, Q1);
40. 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, Q1);
41. 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 3.814, Q1);
42. 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 2.283, Q1);
43. 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 2.283, Q1);
44. 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 3.479, Q1);
45. 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 1.107, Q1);
46. 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, Q1);

47. 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 (IF 1.961);
48. Wichert A., **Sub-symbols and Icons**, *Cognitive Computation*, 1 (4): 342-347, 2009, doi:10.1007/s12559-009-9027-6 (IF 3.479, Q1);
49. 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 3.241, Q1);
50. 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 1.107, Q1);
51. 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 3.241, Q1);
52. Marcos P., Seitz T., Bubbs 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 2.95, Q1)
53. Wichert A., **Cell Assemblies for Diagnostic Problem-Solving**, *Neurocomputing*, 69(7-9): 810-824, 2006, doi:10.1016/j.neucom.2005.04.008 (IF 3.241, Q1)
54. 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 3.046, Q1)
55. Wichert A., **Associative Diagnose** *Expert Systems*, 22(1): 26-39, 2005, doi: 10.1111/j.1468-0394.2005.00291.x (IF 1.43, Q2)
56. 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 1,425, Q3)
57. Wichert A. **Categorical Expert Systems**, *Expert Systems*, 21(1): 34-47, 2004, doi: 10.1111/j.1468-0394.2004.00261.x (IF F 1.43, Q2)
58. Wichert A., **Learning of Associative Prediction by Experience**, *Neurocomputing*, 48(1-4):741-762, 2002, doi:10.1016/S0925-2312(01)00671-3 (IF 3.241, Q1);
59. 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 5.426, Q1)
60. Wichert A., **Pictorial Reasoning with Cell Assemblies**, *Connection Science*, 13(1):1-42, 2001, doi:10.1080/05940090010022693 (IF 0.933, Q3);
61. Wichert A.: **Associative Computation, Thesis Abstract**, *Künstliche Intelligenz*, 1:72-73, 2001

62. 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 3.768. Q1*);

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
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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 Congres 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*, *Entropy*, *Journal of Theoretical Biology*, *Physics Letters A*, *Multivariate Behavioral Research*, *Computational Statistics*, *Neural Computation* (MIT Press), *Journal of Biological Physics*, *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

- **CiE 2022**, Computability in Europe 2022. Program Committee
- **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. Jury member of the PhD defence *Robustness in spatial search by continuous time quantum walk* of Shantanav Chakraborty at Electrical and Computer Engineering, Instituto Superior Técnico, Universidade de Lisboa, 2017.
2. External jury member of the PhD defence *Robust and interpretable classification models for molecular high-throughput data* of Florian Schmid at Ulm University, 2016.
3. 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.
4. 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.

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)

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)