

Andreas Holzinger, 3-Pages Scientific Résumé as of September 2018

“Science is to test crazy ideas - Engineering is to put these ideas into Business”

PERSONAL DATA:

Current Position Lead Holzinger Group, Research Unit HCI-KDD
Assoc.Prof. for Applied Computer Science, TU Graz
Visit.Prof. for Machine Learning in Health Informatics, TU Vienna

Primary Address Institute for Medical Informatics, Statistics and Documentation,
Med. University Graz, Auenbruggerplatz 2/V, A-8036 Graz, Austria

Second Address Institute of Interactive Systems and Data Science,
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Born/Family status Austria, 18.04.1963, Nat.: Austrian; Married since 1993, 2 children



SUBJECT: Medical Informatics **TOPICS:** Explainable-AI, Machine Learning, Knowledge Extraction

Video Research Statement: <https://goo.gl/dB9heh> **ORCID:** <http://orcid.org/0000-0002-6786-5194>

RESEARCH STATEMENT: <https://goo.gl/ssK4dS> **TEACHING STATEMENT:** <https://goo.gl/4BSn7p>

100-words RESEARCH STATEMENT:

Andreas promotes a synergistic approach towards *understanding intelligence*, enabling context-adaptive systems, by integrating two areas: Human-Computer Interaction (HCI) & Knowledge Discovery/Data Mining (KDD) with the goal to augment human intelligence with artificial intelligence. Andreas has pioneered in interactive machine learning (iML) with the human-in-the-loop with application in health informatics. His contributions are relevant due to raising legal and privacy issues, because it is highly important in the future to make decisions transparent, understandable and re-traceable, hence to explain *why* a decision has been made. Consequently, his aim is to contribute to the international research community to help to pave the way towards *explainable-AI*.

150-words BIOGRAPHY:

Andreas obtained a Ph.D. in Cognitive Science from Graz University in 1998 and his Habilitation (second Ph.D.) in Computer Science from TU Graz in 2003. He is Associate Editor of Springer/Nature Knowledge and Information Systems (KAIS), Section Editor for Machine Learning of Springer/Nature BMC Medical Informatics and Decision Making (MIDM), and Editor-in-Chief of Machine Learning & Knowledge Extraction (MAKE). He is organizer of the IFIP Cross-Domain Conference Machine Learning & Knowledge Extraction (CD-MAKE), Austrian representative within the IFIP TC 12 Artificial Intelligence and member of the IFIP WG 12.9 Computational Intelligence, the ACM, IEEE, GI, the Austrian Computer Science and the Association for the Advancement of Artificial Intelligence (AAAI). Andreas serves as consultant for the Canadian, US, UK, Swiss, French, Italian and Dutch governments, for the German Excellence Initiative, and as national expert in the European Commission. Since 2003 he has participated in leading positions in 30+ R&D multi-national projects, budget 6+ MEUR, 300+ publications, 10k citations, h-index = 45.

PROFESSIONAL EMPLOYMENT HISTORY:

2017 Visiting Professor for Machine Learning & Knowledge Extraction for Health Informatics, Univ. Verona

2016-present Visiting Professor for Machine Learning in Health Informatics, TU Vienna

2010-present Lead of Holzinger Group, Research Unit, HCI-KDD, Medical University Graz

2012 Visiting Professor for KDD in health, University College London, UK

2011/12 Visiting Professor for KDD in health informatics, RWTH Aachen University, Germany

2007 Visiting Professor for HCI-KDD for health, Middlesex University London, UK

2006-present Visiting Professor for Health Information Management/Decision Support, Vienna Business University

2005/06 Visiting Professor for HCI-KDD in health informatics, Vienna TU Vienna, Austria

2004/05 Visiting Professor for Knowledge Management, Innsbruck University, Austria

2003-2004 Technical Director of the Virtual Medical Campus Graz, Austria

2002-2003 Visiting Professor for Medical Knowledge Management at the Nations Health School, Berlin, Germany

EDUCATION:

- 2003 Habilitation (second Ph.D.) in Computer Science, Graz University of Technology;
1998 PhD – Doctor of Philosophy, Cognitive Science, University of Graz with summa cum laude;
1996 MPh – Master of Philosophy in Media and Sociology, University of Graz, with distinction;
1995 MSc – Master of Science in Physics, University of Graz, with distinction;
1993 BEng – Bachelor of Electrical and Communications Engineering, Graz University of Technology;
1992 Dipl. Ed. - Diploma as Lecturer for Adult Education (Computer Programming in C and FORTRAN);
1990 CEng - Chartered Engineer for Information Engineering;
1986/87 Kings College of Further Education, Bournemouth (UK), with honors in Computing
1983 Foreman in Industrial Electronics & Instructor exam, (Development of a Logic tester), with distinction
1981 Certification exam; (Journeyman's piece: Development of a digital illumination detector), with distinction
1978–1981 Apprenticeship Information Technology, 3 classes vocational school, with distinction

AWARDS AND HONORS (selected):

- 2018 Elected as Austrian Representative to the IFIP Technical Committee TC 12 Artificial Intelligence
2018 Invited Keynote at IEEE World Symposium on Digital Intelligence for Systems & Machines (DISA 2018)
2017 Invited Keynote at DATA 2017, Universidad Rey Juan Carlos (URJC), Spain
2016 Invited Keynote at 20th KES Knowledge Engineering Systems Conference, York, UK
2015 Invited Keynote at Princess Margaret Cancer Center, University of Toronto, Canada
2014 Invited Tutorial on interactive Knowledge Discovery at the WIC-Conference, Warsaw, Poland
2014 Invited Keynote on interactive Knowledge Discovery, VISIGRAPP 2014, Lisbon, Portugal
2013 Invited Keynote on Big Health Data at IBM Industrial Big Data summit, Vienna, Austria
2013 Best Paper Award, SouthCHI, Maribor, Slovenia;
2012 Invited Keynote IT-challenges Business conference, Big Data summit, TechGate Vienna, Austria;
2012 Best Paper Award at ICE-Business conference, Rome, Italy;
2012 Invited Keynote on interactive Data Mining at DATA 2012, Rome, Italy;
2011 Best Paper Award ICE-Business conference, Sevilla, Spain;
2010 Industrial Software Grant, Styrian Business Promotion Agency;
2010 Best Paper Award DATA conference, Athens, Greece;
2010 Science Ideas Competition Award, Science Park, Graz

GRANTS (selected):

- 2019-2023 EU H2020-SC1-FA-DTS-2018 826078 Feature Cloud, 4,6 MEUR (Co-PI, PI on 600 kEUR);
2017-2021 Industry, Digital Pathology, Co-PI, 600 kEUR;
2016-2019 EU H2020 Marie Curie ACROSSING Smarter Assisted Living solutions, Co-PI, 511 kEUR;
2014-2017 FFG K1, MALBIODI, Adv. Machine Learning for Biomarker Discovery, PI, 540 kEUR;
2013–2014 Industry, Content Analytics in Biomedicine, PI, 92 kEUR;
2013-2014 Industry and Austrian Research Agency, EMOMES, PI, 36 kEUR;
2011-2012 ICT-2011.95 FET-Flagship IT Future of Medicine, Co-PI, 237 kEUR
2010–2012 Industry and Styrian Research Agency, Visualization of complex processes, PI, 54 kEUR;
2010–2014 EU FP 7 IST-2010-248590 REACTION, Co-PI, PI on 204 kEUR;
2008–2011 Industry, Semantic Information Extraction from Information Systems, PI, 22 kEUR;
2009–2011 Industry and Styrian Research Agency, emendus, complexity reduction, PI, 58 kEUR
2008–2010 Industry, Austrian Research Agency (FFG), iHAND, Handwriting Algorithms, PI, 58 kEUR;
2007–2010 EU FP 6 IST-2005-2.6.2 045056 EMERGE, Emergency Monitoring/Prevention, PI, 300 kEUR;
2004–2005 Austrian Research Agency, HAEMOSIM, Haemodynamics Simulation Project, PI, 88 kEUR;
2002–2004 Austrian Ministry of Science, Virtual Medical Campus Graz, PI, 450 kEUR;

SERVICES TO THE INTERNATIONAL RESEARCH COMMUNITY (selected):

- 2011–present Initiator and Lead of HCI-KDD Expert Group, see: <http://hci-kdd.org/expert-network-hci-kdd/>
2014–present Member of the IFIP WG 12.9 Computational Intelligence

2013–present Evaluator for European Research Council, Frontier Research Grants
 2013–present Evaluator for Schweizer Nationalfonds zur Förderung der wissenschaftlichen Forschung, Switzerland
 2013–present Evaluator for Agence Nationale de la Recherche (ANR), France
 2012–present Reviewer for Elsevier, Springer, Wiley, Sage and Oxford Journals
 2011–present Project evaluator for National Research Council Canada (NRC), Canada
 2010–present Evaluator for Deutsches Bundesministerium für Bildung und Forschung, Exzellenzinitiative
 2006–present Evaluator for Netherlands Organization for Scientific Research (NWO), Netherlands

EDITORIAL POSITIONS (selected - last 5 years):

2015–present Springer/Nature BMC Medical Informatics and Decision Making, Section Editor for Machine Learning
 2016–present Springer/Nature Machine Learning (MACH) Guest Editor Journal Track ECML-PKDD 2017
 2016–present Elsevier International Journal of Human-Computer Studies, Editorial Board Member
 2017–present MDPI Machine Learning & Knowledge Extraction, Editor-in-Chief
 2014–present Springer/Nature KAIS Knowledge and Information Systems, Associate Editor
 2014–present Springer/Nature BRIN Brain Informatics, Editorial Board Member
 2013–2014 Springer/Nature BMC Bioinformatics, Guest Editor
 2013–2014 Elsevier Journal of Information Processing and Management, Guest Editor

SERVICES FOR THE INTERNATIONAL RESEARCH COMMUNITY (selected):

2017- Organizer of the IFIP Cross Domain Conference for Machine Learning & Knowledge Extraction (CD-MAKE)
 2016 Program co-chair of the IFIP CD-ARES conference and of the DEXA ITBAM conference
 2015 Co-chair at the 14th IEEE Intl. Conference on Machine Learning and Applications, Miami (FL), US
 2014 General chair at the DATA conference in Vienna, Austria
 2011-2017 Organizer of 10 workshops AI/ML for Health Informatics in 9 different countries: Graz (Austria), Macau (China), Maribor (Slovenia), Regensburg (Germany), Lisbon (Portugal), Warsaw (Poland), Banff (Canada), London (UK), Salzburg (Austria), Reggio di Calabria (Italy)

RECENT UNIVERSITY TEACHING (selected):

2017 LV 340.300, 3 ECTS, Interacting with Agents (federated machine learning approaches), Univ. Linz
 2017 LV 004.553, 6 ECTS, Machine Learning & Knowledge Extraction for Health, University Verona, Italy
 2016-present LV 185.A83, 3 ECTS, Machine Learning for Health Informatics, TU Vienna
 2011-2017 LV 709.049, 3 ECTS, Biomedical Informatics, TU Graz
 2011-present LV 706.315, 2 ECTS, Selected Topics on Interactive Knowledge Discovery: explainable-AI, TU Graz
 2008-present 3 ECTS, MAKE-Decisions: From Data Science to Explainable-AI, Executive Academy, WU Vienna
 2003-2011 LV 000.141, 3 ECTS, Decision Support, Medical University Graz
 2009-present Member of the Doctoral School "Computer Science" at Graz University of Technology

OPEN SOURCE SOFTWARE OF THE HOLZINGER GROUP (recent, selected):

Augmentor: An Image Augmentation Library for Machine Learning
 Python Version: <https://github.com/mdbloice/Augmentor> <http://augmentor.readthedocs.io>
 Julia Version: <https://github.com/Evizero/Augmentor.jl> <http://augmentorjl.readthedocs.io>

Graphinius: Graph-Based Machine Learning– GraphiniusJS (Base Library)
<https://github.com/cassinius/GraphiniusJS>
 – GraphiniusVIS (Visualization Module) <https://github.com/Niciii/GraphiniusVis>
 – GraphiniusPlatform <http://graphinius.io>

TUGrovis: Tumor growth visualization towards in-silico tumor-growth simulation
<https://github.com/davcem/cpm-cytoscape>