Curriculum Vitae Dr. Manfred K. Warmuth

Name: **Manfred K. Warmuth**

Research Priorities: Computational learning theory, online algorithms, machine learning, discrete mathematics, artificial intelligence

Manfred K. Warmuth is a German computer scientist who conducts research into computational learning theories with a special focus on online learning algorithms,

Academic and Professional Career

2019 - 2020	Visiting Faculty Member, Google Brain, Mountain View, USA
2019	Visiting Faculty Member, Google Brain, Zurich, Switzerland
2018	Emeritus, Distinguished Professor of Computer Science, University of California, Santa Cruz, USA
2017	Distinguished Professor (Off Scale) of Computer Science, University of California, Santa Cruz, USA
2013	Professor (Step 9) of Computer Science, University of California, Santa Cruz, USA
2010	Professor (Step 8) of Computer Science, University of California, Santa Cruz, USA
2007	Faculty Visitor, Google Brain, Mountain View, USA
2007	Professor (Step 7) of Computer Science, University of California, Santa Cruz, USA
2004	Professor (Step 6) of Computer Science, University of California, Santa Cruz, USA
2004	Senior Principal Researcher, National ICT Australia Ltd (NICTA), Canberra, Australia
1993	Scientific Advisor, AT&T Bell Labs, Murray Hill, USA
1992 - 2004	Professor of Computer Science, University of California, Santa Cruz, USA

1990	Visiting Research Fellow, Fujitsu International Institute for Advanced Study of Social Information Science, Numazu, Japan
1988 - 1992	Associate Professor of Computer and Information Sciences, University of California, Santa Cruz, USA
1988 - 1989	Visiting Fellow, Computer Science, Harvard University, Cambridge, USA
1983 - 1988	Assistant Professor of Computer and Information Sciences, University of California, Santa Cruz, USA
1984 - 1985	Postdoc, The Hebrew University of Jerusalem, Jerusalem, Israel
1982 - 1983	Visiting Lecturer, University of California, Berkeley, USA
1982	Visiting Lecturer, University of California, Santa Cruz, USA
1981	PhD in Computer Science, University of Colorado, Boulder, USA
1980	Master of Science in Computer Science, University of Colorado, Boulder, USA

Functions in Scientific Societies and Committees

since 2001	Action Editor, Journal of Machine Learning Research
1999 - 2001	Coeditor, Machine Learning
1993 - 1996	Coeditor, Information and Computation

Project Coordination, Membership in Collaborative Research Projects

2016 - 2019	“On-Line Learning Algorithms for Path Experts with Non-Additive Losses” Project, Division of Information and Intelligent Systems, Robust Intelligence, National Science Foundation (NSF), USA
2011 - 2016	Project Manager “Probabilistic Models using Generalized Exponential Families”, Division of Information and Intelligent Systems, Robust Intelligence, NSF, USA
2010	Project Manager “Combining Ranked Lists”, Google Gift Grant, Google Foundation, Mountain View, USA
2009 - 2012	„Kernelization with Outer Product Instances” Project, Division of Information and Intelligent Systems, Robust Intelligence, NSF, USA
2003 - 2008	“Representation and Learning in Computational Game Theory” Project, Medium ITR, Division of Information and Intelligent Systems, NSF, USA
2003 -2005	“Analysing Iterative Machine Learning Algorithms with Information Geometry” Project, Australian Research Council, Australia
1999 - 2002	“Deriving and Analyzing Learning Algorithms” Project, NSF Grant, NSF, USA

1997 - 1999 “Amortized Analysis for On-Line Learning Algorithms” Project, NSF Grant, NSF, USA

1992 - 1994 “Machine Learning” Project, NSF Grant, NSF, USA

1986 - 1992 “Machine Learning” Project, Office of Naval Research, Arlington, USA

Honours and Awarded Memberships

since 2021 Member, German National Academy of Sciences Leopoldina, Germany

1984 -1985 Scholarship, Fellow, US-Israel Binational Science Foundation, Jerusalem, Israel

Research Priorities

Manfred K. Warmuth is a German computer scientist who conducts research into computational learning theories with a special focus on online learning algorithms,

including weighted majority and exponentiated gradient algorithms. A pioneer of online algorithm deduction and analysis, Manfred Warmuth developed a number of methods aimed at making algorithms robust to changing data. His most recent research has been dedicated to the development of matrix parameter online algorithms. He was able to generalize the multiplicative updates of probability vectors to density matrices and developed a Bayesian probability calculation for density matrices.

Another one of Manfred K. Warmuth’s research priorities is machine learning – a field in which he described several problems previously unsolved by the scientific community. This includes a presumed compression scheme according to which every Vapnik-Chervonenkis dimension d concept class sample can be compressed to subsets of size equal to d.