Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Monika Henzinger

Image: Markus Scholz | Leopoldina

Name: **Monika Henzinger**
Date of birth: **1966**

Research Priorities: Algorithms, algorithmic game theory, data structures, search engines

Monika Henzinger is a computer scientist. She develops and researches algorithms for computers, in particular optimisation and graph algorithms. She also focuses on algorithmic game theory and computer-assisted verification.

Academic and Professional Career

since 2023	Professor, Institute of Science and Technology Austria (ISTA), Klosterneuburg, Austria
2021	Guest Professor, Stanford University, Stanford, USA
2015	Guest Fellow, Simons Institute for the Theory of Computing, University of California, Berkeley, USA
2011 - 2023	Professor of Computational Science, Algorithms and IT and Communication Technology, University of Vienna, Vienna, Austria
2009 - 2011	Professor of Computer Science, Research Group “Theory and Application of Algorithms”, Faculty for Scientific Computing, University of Vienna, Vienna, Austria
2009 - 2014	Head, Research Group “Theory and Applications of Algorithms”, Research Platform “Computational Sciences Center”, University of Vienna, Vienna, Austria
2005 - 2009	Professor of Computer Science, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
2000 - 2004	Director of Research, Google Inc., Mountain View, USA
1999	Professor of Computer Science, Saarland University, Saarbrücken, Germany

1996 - 1999	Research Associate, Systems Research Center, Digital Equipment Corporation, Palo Alto, USA
1993 - 1996	Assistant Professor for Computer Science, Department of Computer Science, Cornell University, Ithaca, USA
1993	Postdoctoral Fellow, Nippon Electric Company (NEC) Research Center, Princeton, USA
1989 - 1993	Doctorate in Computer Science, Princeton University, Princeton, USA
1989	Degree in Computer Science, Saarland University, Saarbrücken, Germany

Functions in Scientific Societies and Committees

since 2018	Member, Supervisory Board, AMS AG, Premstätten, Austria
2018	Chair, Program Committee, 50th Annual ACM Symposium on the Theory of Computing (STOC), Association for Computing Machinery (ACM), New York City, USA
since 2015	Editor, Acta Informatica
2015 - 2018	Editor, Theoretical Computer Science
2014	Member, President's Science and Technology Advisory Council, European Commission
2013	Chairperson, Kanellakis Award Committee, Association for Computing Machinery (ACM), New York City, USA
2012 - 2019	Editor, Series Monographs, Theoretical Computer Science, European Association for Theoretical Computer Science (EATCS)
2011 - 2019	Member, Council, EACTS
2011 - 2014	Member, Award Committee "von Neumann Medal", Institute of Electrical and Electronics Engineers (IEEE), New York City, USA
2010 - 2014	Member, Junge Kurie, Austrian Academy of Sciences, Austria
2010 - 2014	Member, Kanellakis Award Committee, Association for Computing Machinery (ACM), New York City, USA
2010 - 2013	Member, Presburger Award Committee, European Association for Theoretical Computer Science (EATCS), 2013 Chairperson
2009 - 2013	Member, Editorial Board, Research Highlights of the Communications, ACM, New York City, USA
2008 - 2015	Member, University Council, Technical University of Munich (TU), Munich, Germany

Project Coordination, Membership in Collaborative Research Projects

2016 - 2019	Head, Project “Efficient Algorithms for Computer Aided Verification”, Vienna Science and Technology Fund, Vienna, Austria
2014 - 2019	Head, Advanced Grant, European Research Council (ERC)
2012 - 2016	Partner, Foundational Research on Multilevel Complex Networks and Systems, MULTIPLEX, European Commission
2011 - 2015	Co-Investigator, “Modern Graph Algorithmic Techniques in Formal Verification”, Austrian Science Fund (FWF), Austria
2011 - 2014	Spokesperson, Doktoratskolleg “Vienna Graduate School in Computational Science”, University of Vienna, Vienna, Austria
2011 - 2014	Member, Doktoratskolleg “Computational Optimization”, University of Vienna, Vienna, Austria
2010 - 2015	Head, Challenges in Sponsored Search Auctions, Vienna Science and Technology Fund, Vienna, Austria

Honours and Awarded Memberships

2021	Wittgenstein Prize, FWF, Austria
2020	netidee Science Grant, FWF, Austria
2019	Carus Medal, German National Academy of Sciences Leopoldina, Germany
2018	City of Vienna Prize, Category “Natural Sciences and Technology”, Vienna, Austria
since 2018	Member, Austrian Science Council, Austria
2017	SIGIR Test of Time Award, Special Interest Group on Information Retrieval SIGIR, ACM, New York City, USA
2017 - 2019	Senator, Helmholtz Association of German Research Centres, Germany
since 2017	Member, Austrian Academy of Sciences, Austria
since 2016	Member, ACM, New York City, USA
since 2014	Member, German National Academy of Sciences Leopoldina, Germany
since 2014	Member, EATCS
2014 - 2017	Corresponding Member, Division of Mathematics and Natural Sciences, Austrian Academy of Sciences, Austria
since 2013	Member, Academia Europaea
2013	Honorary Doctorate, Technical University of Dortmund, (TU) Dortmund, Germany
2011	Google Research Award, Google Inc., Santa Clara County, USA

2004	European Young Investigator Award, European Science Foundation
2001	Top 25 Women on the Web Award, San Francisco Women of the Web, San Francisco, USA
1997	Best Paper Award, ACM Symposium on Operating Systems Principles, ACM, New York City, USA
1995	CAREER Award, National Science Foundation (NSF), USA
1992	Wallace Memorial Graduate Fellowship, Princeton University, Princeton, USA
1986 - 1992	Scholarship, German Academic Scholarship Foundation, Germany

Research Priorities

Monika Henzinger is a computer scientist. She develops and researches algorithms for computers, in particular optimisation and graph algorithms. She also focuses on algorithmic game theory and computer-assisted verification.

For every calculation, for every task, a computer needs an algorithm – an instruction how to solve a problem. An algorithm is made up of many individual steps. Each step leads to a specific further step. Graphs model the relationship between data. Graph algorithms play a large role in social networks because elements with connections can be represented in graphs. However, the connections in social networks are changing constantly and thus also the graphs. Despite this, an algorithm must be able to accurately and quickly solve a search request, for example for a specific user group within the network. Monika Henzinger develops graph algorithms and algorithms for computer-assisted searches for complex content (information retrieval) and web data mining. Data mining consists of searching for interconnections in large amounts of data.

In further research work she focuses on internet adverts, specifically “sponsored search auctions”. For every search request, using these auctions determines what advertisement will be shown to users alongside the search results. In order to develop optimal strategies for providers, Monika Henzinger and her team analyse new auctions for search machines.

With her research, Monika Henzinger wants to develop fast and memory-efficient algorithms. In doing so she wants to contribute to computers using less electricity and fewer raw materials. During her time at the American technology company Google Inc., she was responsible for the algorithms of the Google search engine. She continually optimised the algorithms and was thus instrumental in the search engine’s advancement.