

Gerard J. Holzmann

Nimble Research
<http://nimbleresearch.com>

Areas • Software reliability/safety, static source code analysis, code review, formal verification, concurrency, distributed systems, logic model checking, software engineering, software tools.

U.S. National Academy of Engineering (2005)

Education

Ph.D. Technical Sciences, June 1979, Delft University of Technology, The Netherlands
Title: *Coordination Problems in Multiprocessing Systems*. Delft University, 1979.
Thesis advisers: Prof. W.L. van der Poel (Math/CS) and Prof. J.L. de Kroes (EE).
M.Sc. (1976), and B.Sc (1973) EE. Delft University of Technology, The Netherlands.

Employment

2017-	Consultant/Researcher in cybersecurity, code review, code analysis
2017-	Founder Nimble Research.
2012-2017	Senior Faculty Associate (Computer Science), Caltech CMS.
2007-2012	Faculty Associate, Caltech CS.
2007-2017	Fellow, NASA/JPL.
2005-2017	Senior Research Scientist, NASA/JPL.
2003-2017	Chief Scientist Laboratory for Reliable Software, NASA/JPL.
2003-2025	Lecturer (2003-06, 2008-10, 2013, 2015), Caltech CS.
2003-2005	Principal Computer Scientist, NASA/JPL.
2001-2003	Director Computing Principles Research, Bell Labs, CS Research.
1995-2001	Distinguished Member of Technical Staff, Bell Labs, CS Research.
1983-1995	Member Technical Staff, Bell Laboratories, Murray Hill, NJ, CS Research.
1981-1983	Assistant Prof., Delft University of Technology, The Netherlands. EE.
1980-1981	Member Technical Staff, Bell Laboratories, Murray Hill, NJ, CS Research.
1979-1980	Fullbright scholarship, USC, host: Per Brinch Hansen, Los Angeles, CA.

Teaching

Graduate and undergraduate courses in logic model checking, software verification, and safety-critical software design, at USC (1980), Bell Labs (1981), Delft Univ. (1982), Princeton (1989), Columbia (1991), KTH (1991-1996), JPL (2009-2017), Caltech (2004-2025), Northrup Grumman (2010-2013), UCLA extension (2010-2016). Created and taught courses for flight software developer certification at JPL (2009-2020).

Awards, Honors

2022	Asia-Pacific Artificial Intelligence Association Fellow
2015	IEEE Harlan D. Mills Award
2013	NASA Software of the Year Award
2013	NASA Group Achievement Award, MSL Flight Software Team
2012	NASA Exceptional Engineering Achievement Medal
2012	ACM Fellow
2011	NASA Group Achievement Award (Toyota investigation)
2009	NASA Space Act Award
2007	JPL Fellow

2006	Doctor Honoris Causa, Twente University, The Netherlands
2006	ACM Kanellakis Theory and Practice Award (with Kurshan, Vardi, and Wolper)
2005	U.S. National Academy of Engineering, elected
2003	Thomas Alva Edison Patent Award, R&D Council of NJ
2002	ACM SIGSOFT Outstanding Research Award
2001	ACM Software Systems Award
1995	Distinguished Member of Technical Staff Award, Bell Labs
1981	Prof. Bähler Prize for best Dutch Ph.D. thesis 1975-1980 in Telecomm., 1st recipient
1979	Fulbright-Hayes Scholarship

Software Tools

2016	<i>cobra</i>	interactive and scriptable source code analysis tool.
2015	<i>tau</i>	formal analysis of tiny automata, interfacing to spin.
2009	<i>scrub</i>	a code review and analysis tool, used in many JPL projects and missions.
2008	<i>swarm</i>	search diversification, randomization, and parallelism for Spin verifications.
2001	<i>uno</i>	a property-based lightweight static source code analyzer for ANSI-C.
1998	<i>modex</i>	automated <i>spin</i> model extraction system for C code (patent 2002),
1995	<i>ubet</i>	requirements capture tool, productized by Lucent (patent 1998).
1989	<i>spin</i>	logic model checking system for the verification of concurrent systems.
1988	<i>sdlvalid</i>	first automated verification system for specifications written in SDL.
1984	<i>pico</i>	early image editing system for digital photography (patent issued 1992).
1980	<i>pan</i>	early automated verification system for communications protocols,

Publications

- 77 papers in conference proceedings
- 42 papers in peer reviewed archival journals
- 55 articles and columns in popular press
- 5 books
- 3 chapters in books

Miscellaneous

- 8 US patents
- 53 invited talks at universities and research labs
- 62 invited talks at conferences
- 14 invited tutorials and courses
- 4 conference proceedings edited
- ~130 program committee memberships
- editor software reliability, IEEE Software

(Last updated June 2025)