

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
2017-2019 Visiting Faculty Associate (Computer Science), Caltech CMS.
2017- Founder and Researcher 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.
2003-2015 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 (2009-2016), Caltech (2004-2019), Northrup Grumman (2010-2013), UCLA extension (2010-). Created and taught courses for flight software developer certification at JPL (2009-2020).

Awards, Honors

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

Some Software Tools

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

Publications

- 77 papers in conference proceedings
- 40 papers in peer reviewed archival journals
- 55 articles and columns in popular press
- 4 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 October 2021)