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Turing Award

The **ACM A.M. Turing Award** is an annual prize given by the Association for Computing Machinery (ACM) to an individual selected for contributions "of lasting and major technical importance to the computer field".[2] The Turing Award is generally recognized as the highest distinction in computer science and the "Nobel Prize of computing".[3][4][5][6]

The award is named after Alan Turing, a British mathematician and reader in mathematics at the University of Manchester. Turing is often credited as being the key founder of theoretical computer science and artificial intelligence.[7] From 2007 to 2013, the award was accompanied by an additional prize of US $250,000, with financial support provided by Intel and Google.[2] Since 2014, the award has been accompanied by a prize of US $1 million, with financial support provided by Google.[1][8]

The first recipient, in 1966, was Alan Perlis, of Carnegie Mellon University. The first female recipient was Frances E. Allen of IBM in 2006.[9]

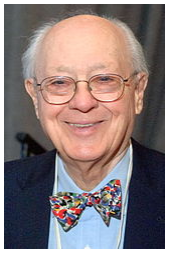
ACM Turing Award

Stephen Kettle's slate statue of Alan Turing at Bletchley Park

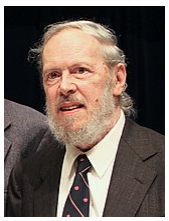
Awarded for	Outstanding contributions in computer science
Country	United States
Presented by	Association for Computing Machinery (ACM)
Reward(s)	US $1,000,000[1]
First awarded	1966
Last awarded	2018
Website	amturing.acm.org (http://amturing.acm.org)

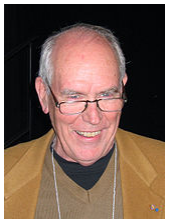
Contents

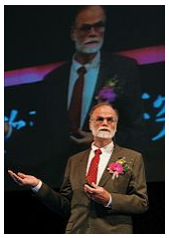
Recipients

Year	Recipient	Picture	Rationale
1966	Alan J. Perlis		For his influence in the area of advanced computer programming techniques and compiler construction.[10]
1967	Maurice Wilkes		Professor Wilkes is best known as the builder and designer of the EDSAC, the first computer with an internally stored program. Built in 1949, the EDSAC used a mercury delay line memory. He is also known as the author, with Wheeler and Gill, of a volume on "Preparation of Programs for Electronic Digital Computers" in 1951, in which program libraries were effectively introduced.[11]
1968	Richard Hamming		For his work on numerical methods, automatic coding systems, and error-detecting and error-correcting codes.[12]
1969	Marvin Minsky		For his central role in creating, shaping, promoting, and advancing the field of artificial intelligence.[13]
1970	James H. Wilkinson		For his research in numerical analysis to facilitate the use of the high-speed digital computer, having received special recognition for his work in computations in linear algebra and "backward" error analysis.[14]
1971	John McCarthy		McCarthy's lecture "The Present State of Research on Artificial Intelligence" is a topic that covers the area in which he has achieved considerable recognition for his work.[15]
1972	Edsger W. Dijkstra		Edsger Dijkstra was a principal contributor in the late 1950s to the development of the ALGOL, a high level programming language which has become a model of clarity and mathematical rigor. He is one of the principal proponents of the science and art of programming languages in general, and has greatly contributed to our understanding of their structure, representation, and implementation. His fifteen years of publications extend from theoretical articles on graph theory to basic manuals, expository texts, and philosophical contemplations in the field of programming languages.[16]
1973	Charles W. Bachman		For his outstanding contributions to database technology.[17]
1974	Donald E. Knuth		For his major contributions to the analysis of

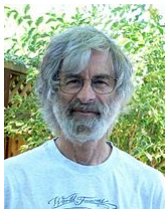
			algorithms and the design of programming languages, and in particular for his contributions to "The Art of Computer Programming" through his well-known books in a continuous series by this title.[18]
1975	Allen Newell		In joint scientific efforts extending over twenty years, initially in collaboration with J. C. Shaw at the RAND Corporation, and subsequently with numerous faculty and student colleagues at Carnegie Mellon University, they have made basic contributions to artificial intelligence, the psychology of human cognition, and list processing.[19]
	Herbert A. Simon		
1976	Michael O. Rabin		For their joint paper "Finite Automata and Their Decision Problem,"[20] which introduced the idea of nondeterministic machines, which has proved to be an enormously valuable concept. Their (Scott & Rabin) classic paper has been a continuous source of inspiration for subsequent work in this field.[21][22]
	Dana S. Scott		
1977	John Backus		For profound, influential, and lasting contributions to the design of practical high-level programming systems, notably through his work on FORTRAN, and for seminal publication of formal procedures for the specification of programming languages.[23]
1978	Robert W. Floyd		For having a clear influence on methodologies for the creation of efficient and reliable software, and for helping to found the following important subfields of computer science: the theory of parsing, the semantics of programming languages, automatic program verification, automatic program synthesis, and analysis of algorithms.[24]
1979	Kenneth E. Iverson		For his pioneering effort in programming languages and mathematical notation resulting in what the computing field now knows as APL, for his contributions to the implementation of interactive systems, to educational uses of APL, and to programming language theory and practice.[25]
1980	Tony Hoare		For his fundamental contributions to the definition and design of programming languages.[26]

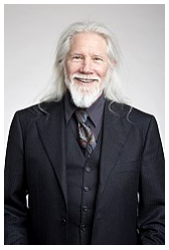
			
1981	Edgar F. Codd		For his fundamental and continuing contributions to the theory and practice of database management systems, esp. relational databases.[27]
1982	Stephen A. Cook		For his advancement of our understanding of the complexity of computation in a significant and profound way.[28]
1983	Ken Thompson		For their development of generic operating systems theory and specifically for the implementation of the UNIX operating system.[29][30]
	Dennis M. Ritchie		
1984	Niklaus Wirth		For developing a sequence of innovative computer languages, EULER, ALGOL-W, MODULA and Pascal.
1985	Richard M. Karp		For his continuing contributions to the theory of algorithms including the development of efficient algorithms for network flow and other combinatorial optimization problems, the identification of polynomial-time computability with the intuitive notion of algorithmic efficiency, and, most notably, contributions to the theory of NP-completeness.
1986	John Hopcroft		For fundamental achievements in the design and analysis of algorithms and data structures.
	Robert Tarjan		
1987	John Cocke		For significant contributions in the design

			and theory of compilers, the architecture of large systems and the development of reduced instruction set computers (RISC).
1988	Ivan Sutherland		For his pioneering and visionary contributions to computer graphics, starting with Sketchpad, and continuing after.
1989	William Kahan		For his fundamental contributions to numerical analysis. One of the foremost experts on floating-point computations. Kahan has dedicated himself to "making the world safe for numerical computations."
1990	Fernando J. Corbató		For his pioneering work organizing the concepts and leading the development of the general-purpose, large-scale, time-sharing and resource-sharing computer systems, CTSS and Multics.
1991	Robin Milner		For three distinct and complete achievements: 1) LCF, the mechanization of Scott's Logic of Computable Functions, probably the first theoretically based yet practical tool for machine assisted proof construction; 2) ML, the first language to include polymorphic type inference together with a type-safe exception-handling mechanism; 3) CCS, a general theory of concurrency. In addition, he formulated and strongly advanced full abstraction, the study of the relationship between operational and denotational semantics.[31]
1992	Butler W. Lampson		For contributions to the development of distributed, personal computing environments and the technology for their implementation: workstations, networks, operating systems, programming systems, displays, security and document publishing.
1993	Juris Hartmanis		In recognition of their seminal paper which established the foundations for the field of computational complexity theory.[32]
	Richard E. Stearns		
1994	Edward Feigenbaum		For pioneering the design and construction of large scale artificial intelligence systems, demonstrating the practical importance and potential commercial impact of artificial intelligence technology.[33]

	Raj Reddy		
1995	Manuel Blum		In recognition of his contributions to the foundations of computational complexity theory and its application to cryptography and program checking.[34]
1996	Amir Pnueli		For seminal work introducing temporal logic into computing science and for outstanding contributions to program and systems verification.[35]
1997	Douglas Engelbart		For an inspiring vision of the future of interactive computing and the invention of key technologies to help realize this vision.[36]
1998	Jim Gray		For seminal contributions to database and transaction processing research and technical leadership in system implementation.
1999	Frederick P. Brooks, Jr.		For landmark contributions to computer architecture, operating systems, and software engineering.
2000	Andrew Chi-Chih Yao		In recognition of his fundamental contributions to the theory of computation, including the complexity-based theory of pseudorandom number generation, cryptography, and communication complexity.
2001	Ole-Johan Dahl		For ideas fundamental to the emergence of object-oriented programming, through their design of the programming languages Simula I and Simula 67.
	Kristen Nygaard		
2002	Ronald L. Rivest		For their ingenious contribution for making public-key cryptography useful in practice.
	Adi Shamir		

			
	Leonard M. Adleman		
2003	Alan Kay		For pioneering many of the ideas at the root of contemporary object-oriented programming languages, leading the team that developed Smalltalk, and for fundamental contributions to personal computing.
2004	Vinton G. Cerf		For pioneering work on internetworking, including the design and implementation of the Internet's basic communications protocols, TCP/IP, and for inspired leadership in networking.
	Robert E. Kahn		
2005	Peter Naur		For fundamental contributions to programming language design and the definition of ALGOL 60, to compiler design, and to the art and practice of computer programming.
2006	Frances E. Allen		For pioneering contributions to the theory and practice of optimizing compiler techniques that laid the foundation for modern optimizing compilers and automatic parallel execution.
2007	Edmund M. Clarke		For their roles in developing model checking into a highly effective verification technology, widely adopted in the hardware and software industries.[37]
	E. Allen Emerson		

	Joseph Sifakis		
2008	Barbara Liskov		For contributions to practical and theoretical foundations of programming language and system design, especially related to data abstraction, fault tolerance, and distributed computing.
2009	Charles P. Thacker		For his pioneering design and realization of the Xerox Alto, the first modern personal computer, and in addition for his contributions to the Ethernet and the Tablet PC.
2010	Leslie G. Valiant		For transformative contributions to the theory of computation, including the theory of probably approximately correct (PAC) learning, the complexity of enumeration and of algebraic computation, and the theory of parallel and distributed computing.
2011	Judea Pearl[38]		For fundamental contributions to artificial intelligence through the development of a calculus for probabilistic and causal reasoning.[39]
2012	Silvio Micali		For transformative work that laid the complexity-theoretic foundations for the science of cryptography and in the process pioneered new methods for efficient verification of mathematical proofs in complexity theory.[40]
	Shafi Goldwasser		
2013	Leslie Lamport		For fundamental contributions to the theory and practice of distributed and concurrent systems, notably the invention of concepts such as causality and logical clocks, safety and liveness, replicated state machines, and sequential consistency.[41][42]
2014	Michael Stonebraker		For fundamental contributions to the concepts and practices underlying modern database systems.[43]
2015	Martin E. Hellman		For fundamental contributions to modern cryptography. Diffie and Hellman's groundbreaking 1976 paper, "New Directions in Cryptography,"[44] introduced the ideas of public-key cryptography and digital signatures, which are the foundation for most regularly-used security protocols on the internet today.[45]
	Whitfield Diffie		

			
2016	Tim Berners-Lee		For inventing the World Wide Web, the first web browser, and the fundamental protocols and algorithms allowing the Web to scale.[46]
2017	John L. Hennessy		For pioneering a systematic, quantitative approach to the design and evaluation of computer architectures with enduring impact on the microprocessor industry.[47]
	David A. Patterson		
2018	Yoshua Bengio		For conceptual and engineering breakthroughs that have made deep neural networks a critical component of computing.[48]
	Geoffrey Hinton		
	Yann LeCun		

See also

- List of ACM Awards
- List of science and technology awards
- List of prizes named after people
- IEEE John von Neumann Medal
- List of Turing Award laureates by university affiliation
- Turing Lecture
- Nobel Prize
- Schock Prize
- Nevanlinna Prize
- Kanellakis Award
- Millennium Technology Prize

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External links

- ACM Chronological listing of Turing Laureates (https://amturing.acm.org/byyear.cfm)
- Visualizing Turing Award Laureates (http://www.tableau.com/public/gallery/turingawards)
- ACM A.M. Turing Award Centenary Celebration (https://www.youtube.com/playlist?list=PLn0nrSd4xjjaL_AVb5DKvxvBhXb8Xrrv5)
- ACM A.M. Turing Award Laureate Interviews (https://www.youtube.com/playlist?list=PLn0nrSd4xjjaSLBSzmno-3Ods6FJE9nlO)
- Celebration of 50 Years of the ACM A.M. Turing Award (https://www.youtube.com/playlist?list=PLn0nrSd4xjjam-7b7tu1__4Xowkq9o1rR)
- ACM A.M. Turing Award (announcements, bios, lectures) by SFBayACM (https://www.youtube.com/playlist?list=PL87GtQd0bfJwEnxpK-3LJUKxq6Dye0nG8)