Bjarne Stroustrup

Bjarne Stroustrup (/ˈbjɑːrnə ˈstraʊstrʊp/; Danish: [ˈpjaːnə ˈstʁʌwˀstʁɔp];[2][3] born 30 December 1950) is a Danish computer scientist, most notable for the creation and development of the C++ programming language.[4] He is a visiting professor at Columbia University, and works at Morgan Stanley as a Managing Director in New York.[5][6][7][8][9]

Contents

Early life and education

Stroustrup was born in Aarhus, Denmark. His family was working class, and he went to the local schools.[10]

He attended Aarhus University 1969–1975 and graduated with a master's degree in mathematics and computer science. His interests focused on microprogramming and machine architecture. He learned the fundamentals of object-oriented programming from its inventor, Kristen Nygaard, who frequently visited Aarhus.

In 1979, he received a PhD in computer science from the University of Cambridge,[11] where he was supervised by David Wheeler.[1][12] His thesis concerned communication in distributed computer systems.[13]

Career

In 1979, Stroustrup began his career as a member of technical staff in the Computer Science Research Center of Bell Labs in Murray Hill, New Jersey, USA. There, he began his work on C++ and programming techniques. Stroustrup was the head of AT&T Bell

Bjarne Stroustrup	
Stroustrup in 2010	
Born	30 December 1950 Aarhus, Denmark
Nationality	Danish
Education	Aarhus University (MSc) University of Cambridge (PhD)
Known for	C++
Awards	Grace Murray Hopper Award (1993) ACM Fellow (1994) IEEE Fellow (1994) William Procter Prize for Scientific Achievement (2005) Dr. Dobb's Excellence Award (2008) Dahl–Nygaard Prize (2015) CHM Fellow (2015)

Labs' Large-scale Programming Research department, from its creation until late 2002. In 1993, he was made a Bell Labs fellow and in 1996, an AT&T Fellow.

From 2002 to 2014, Stroustrup was the College of Engineering Chair in Computer Science Professor at Texas A&M University.[14][15] From 2011, he was made a University Distinguished Professor.

As of January 2014, Stroustrup is a Technical Fellow and Managing Director in the technology division of Morgan Stanley in New York City and a Visiting Professor in Computer Science at Columbia University.[16]

C++

Stroustrup is best known for his work on C++. In 1979, he began developing C++ (initially called "C with Classes"). In his own words, he "invented C++, wrote its early definitions, and produced its first implementation [...] chose and formulated the design criteria for C++, designed all its major facilities, and was responsible for the processing of extension proposals in the C++ standards committee." C++ was made generally available in 1985. For non-commercial use, the source code of the compiler and the foundation libraries was the cost of shipping (US$75); this was before Internet access was common. Stroustrup also published a textbook for the language in 1985, *The C++ Programming Language*.[17]

Stroustrup (standing on left) at the March 1996 Santa Cruz meeting of the C++ Standards Committee

The key language-technical areas of contribution of C++ are:

- A static type system with equal support for built-in types and user-defined types (that requires control of the construction, destruction, copying, and movement of objects; and operator overloading).
- Value and reference semantics.
- Systematic and general resource management (RAII): constructors, destructor, and exceptions relying on them.
- Support for efficient object-oriented programming: based on the Simula model with statically checked interfaces, multiple inheritance, and efficient implementation based on virtual function tables.
- Support for flexible and efficient generic programming: templates with specialization and concepts.
- Support for compile-time programming: template metaprogramming and compile-time evaluated functions ("constexpr functions").
- Direct use of machine and operating system resources .
- Concurrency support through libraries (where necessary, implemented using intrinsics).

	IET Faraday Medal (2017)
	Charles Stark Draper Prize (2018)
	Computer Pioneer Award (2018)
Scientific career	
Institutions	Aarhus University
	University of Cambridge
	Texas A&M University
	Bell Labs
	Morgan Stanley
	Columbia University
Thesis	*Communication and control in distributed computer systems* (https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.474113) (1979)
Doctoral advisor	David Wheeler[1]
Website	stroustrup.com (http://stroustrup.com)

Stroustrup documented his principles guiding the design of C++ and the evolution of the language in his 1994 book, *The Design and Evolution of C++*,[18] and two papers for ACM's History of Programming Languages conferences.[19][20]

Stroustrup was a founding member of the C++ standards committee (from 1989, it was an ANSI committee and from 1991 an ISO committee) and has remained an active member ever since. For 24 years he chaired the subgroup chartered to handle proposals for language extensions (Evolution Working Group).

Awards and honors

Selected honors[21]

- 2018: The Charles Stark Draper Prize from The US National Academy of Engineering for conceptualizing and developing the C++ programming language.
- 2018: The Computer Pioneer Award from The IEEE Computer Society for bringing object-oriented programming and generic programming to the mainstream with his design and implementation of the C++ programming language.
- 2017: The Faraday Medal from the IET (Institute of Engineering Technology) for significant contributions to the history of computing, in particular pioneering the C++ programming language.
- 2010: The University of Aarhus's Rigmor og Carl Holst-Knudsens Videnskabspris.
- 2005: The William Procter Prize for Scientific Achievement from Sigma Xi (the scientific research society) as the first computer scientist ever.
- 1993: The ACM Grace Murray Hopper award for his early work laying the foundations for the C++ programming language. Based on those foundations and Dr. Stroustrup's continuing efforts, C++ has become one of the most influential programming languages in the history of computing.

Fellowships

- Member of the National Academy of Engineering in 2004.
- Fellow of the Association for Computing Machinery (ACM) in 1994.
- Fellow of the Institute of Electrical and Electronics Engineers (IEEE) in 1994
- Fellow of the Computer History Museum for his invention of the C++ programming language. in 2015.
- Honorary Fellow of Churchill College, Cambridge in 2017.

Honorary doctorates and professorships

- He was awarded an honorary doctorate from the University Carlos III, Spain 2019.[22]
- Stroustrup has been a noble doctor at ITMO University since 2013.[23]
- Honorary Professor in Object Oriented Programming Languages, Department of Computer Science, University of Aarhus. 2010.

Publications

Stroustrup has written or co-written a number of publications,[24][25] including the books:

- *A Tour of C++* (1st and 2nd edition)[26]

- Programming: Principles and Practice *Using C++*[27]
- *The C++ Programming Language* (1st, 2nd, 3rd, and 4th edition)[28]
- *The Design and Evolution of C++*[29]
- *The Annotated C++ Reference Manual*.[30]

In all, these books have been translated into 21 languages.[31]

More than 100 academic articles, including:

- B. Stroustrup: Software Development for Infrastructure. Computer, vol. 45, no. 1, pp. 47–58, Jan. 2012, doi:10.1109/MC.2011.353.
- B. Stroustrup: Evolving a language in and for the real world: C++ 1991–2006. ACM HOPL-III. June 2007.
- B Stroustrup: What should we teach software developers? Why? CACM. January 2010.
- Gabriel Dos Reis and Bjarne Stroustrup: A Principled, Complete, and Efficient Representation of C++. Journal of Mathematics in Computer Science Volume 5, Issue 3 (2011), Page 335–356 doi:10.1007/s11786-011-0094-1. Special issue on Polynomial System Solving, System and Control, and Software Science.
- Gabriel Dos Reis and Bjarne Stroustrup: General Constant Expressions for System Programming Languages. SAC-2010. The 25th ACM Symposium on Applied Computing. March 2010.
- Y. Solodkyy, G. Dos Reis, and B. Stroustrup: Open and Efficient Type Switch for C++. Proc. OOPSLA'12.
- Peter Pirkelbauer, Yuriy Solodkyy, Bjarne Stroustrup: Design and Evaluation of C++ Open Multi-Methods. In Science of Computer Programming (2009). Elsevier Journal. June 2009. doi:10.1016/j.scico.2009.06.002.
- Gabriel Dos Reis and Bjarne Stroustrup: Specifying C++ Concepts. POPL06. January 2006.
- B. Stroustrup: Exception Safety: Concepts and Techniques. In Springer Verlag Lecture Notes in Computer Science, LNCS-2022. ISSN 0302-9743. ISBN 3-540-41952-7. April 2001.
- B Stroustrup: Generalizing Overloading for C++2000. Overload, Issue 25. 1 April 1998.
- B. Stroustrup: Why C++ isn't just an Object-Oriented Programming Language. Addendum to OOPSLA'95 Proceedings. OOPS Messenger, vol 6 no 4, pp 1–13. October 1995.
- B. Stroustrup: A History of C++: 1979–1991. Proc ACM History of Programming Languages conference (HOPL-2). ACM Sigplan Notices. Vol 28 No 3, pp 271–298. March 1993. Also, History of Programming languages (editors T.J.Begin and R.G.Gibson) Addison-Wesley, 1996.
- B. Stroustrup: What is Object-Oriented Programming? (1991 revised version). Proc. 1st European Software Festival. February 1991.
- B. Stroustrup: Data Abstraction in C. Bell Labs Technical Journal. vol 63. no 8 (Part 2), pp 1701–1732. October 1984.
- B. Stroustrup: Classes: An Abstract Data Type Facility for the C Language. Sigplan Notices, January 1982.

More than a hundred technical reports for the C++ standards committee (WG21)[32]

References

1. Bjarne Stroustrup (https://mathgenealogy.org/id.php?id=137515) at the Mathematics Genealogy Project ✏

2. Stroustrup, Bjarne. "How do you pronounce "Bjarne Stroustrup?" " (http://www.stroustrup.com/bs_faq.html#pronounce). *Bjarne Stroustrup's Homepage*. Retrieved 18 November 2014.

3. Stroustrup, Bjarne. "Bjarne pronounces his own name" (http://www.stroustrup.com/pronounciation.wav). *Bjarne Stroustrup's Homepage*. Retrieved 18 November 2014.

4. Wong, William (29 October 2013). "Interview: Bjarne Stroustrup Discusses C++" (http://electronicdesign.com/dev-tools/interview-bjarne-stroustrup-discusses-c). *Electronic Design*. Retrieved 29 January 2014.

5. "Bjarne Stroustrup's Homepage" (https://web.archive.org/web/20000707005032/http://www.research.att.com/~bs/homepage.html). *Research.att.com*. Archived from the original (http://www.research.att.com/~bs/homepage.html) on 7 July 2000. Retrieved 9 June 2016.

6. Stroustrup, Bjarne (2010). "Viewpoint: What should we teach new software developers? Why?" (https://doi.org/10.1145%2F1629175.1629192). *Communications of the ACM*. **53**: 40–42. doi:10.1145/1629175.1629192 (https://doi.org/10.1145%2F1629175.1629192).

7. Stroustrup, Bjarne (1998). "The Real Stroustrup Interview" (http://www.stroustrup.com/ieee_interview.pdf) (PDF). *Computer*. **31** (6): 110–119. doi:10.1109/MC.1998.683014 (https://doi.org/10.1109%2FMC.1998.683014). S2CID 20329264 (https://api.semanticscholar.org/CorpusID:20329264).

8. "List of interviews with Bjarne Stroustrup" (http://www.stroustrup.com/interviews.html). *stroustrup.com*.

9. "A hoax interview transcript with IEEE's *Computer* magazine" (http://harmful.cat-v.org/software/c++/I_did_it_for_you_all). *harmful.cat-v.org*.

10. "NAE Honors 2018 Draper Prize Winner" (http://www.stroustrup.com/draper_acceptance_speech.pdf) (PDF). *stroustrup.com*. 2 January 2020.

11. Wong, William (26 November 2013). "Bjarne Stroustrup: C++ Creator Keeps RUNE Developing" (http://electronicdesign.com/dev-tools/bjarne-stroustrup-c-creator-keeps-developing). *Electronic Design*. Retrieved 29 January 2014.

12. Stroustrup, Bjarne (1979). *Communication and control in distributed computer systems* (https://web.archive.org/web/20181116001244/https://copac.jisc.ac.uk/id/5546543?style=html). *jisc.ac.uk* (PhD thesis). University of Cambridge. OCLC 219769715 (https://www.worldcat.org/oclc/219769715). EThOS uk.bl.ethos.474113 (http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.474113). Archived from the original (https://copac.jisc.ac.uk/id/5546543?style=html) on 16 November 2018. Retrieved 15 November 2018.

13. Stroustrup, Bjarne (2 January 2020). "Communication and control in distributed computer systems" (https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.474113). *British Library*.

14. "Some Information about Bjarne Stroustrup" (https://web.archive.org/web/20070701083013/http://www.research.att.com/~bs/bio.html). Archived from the original (http://www.research.att.com/~bs/bio.html) on 1 July 2007. Retrieved 27 June 2007.

15. Communications, Texas A&M Engineering (8 September 2015). "Faculty – People – Computer Science & Engineering – College of Engineering" (http://www.cse.tamu.edu/people/faculty). *Cse.tamu.edu*. Retrieved 9 June 2016.

16. "Department of Computer Science, Columbia University – Faculty" (https://www.cs.columbia.edu/people/faculty). *Cs.columbia.edu*. Retrieved 9 June 2016.

17. Stroustrup, Bjarne (2 January 2020). "The C++ Programming Language" (http://stroustrup.com/4th.html). *stroustrup.com*.

18. Stroustrup, Bjarne (2 January 2020). "The Design and Evolution of C++" (http://stroustrup.com/dne.html). *stroustrup.com*.

19. Stroustrup, Bjarne (2 January 2020). "A History of C++: 1979– 1991" (http://www.stroustrup.com/hopl2.pdf) (PDF). *stroustrup.com*.

20. Stroustrup, Bjarne (2 January 2020). "Evolving a language in and for the real world: C++ 1991– 2006" (http://www.stroustrup.com/hopl-almost-final.pdf) (PDF). *stroustrup.com*.

21. Stroustrup, Bjarne (2 January 2020). "Some Information about Bjarne Stroustrup" (http://stroustrup.com/bio.html). *stroupstup.com*.
22. "Honoris Causa | UC3M" (https://www.uc3m.es/about-uc3m/honoris-causa). *www.uc3m.es*.
23. "Ученый Совет НИУ ИТМО на заседании 25.06.2013 г. избрал Бьѐрна Страуструпа почетным доктором нашего университета" (http://is.ifmo.ru/doctors/stroustrup.pdf) (PDF). *ls.ifmo.ru*. Retrieved 7 December 2017.
24. Bjarne Stroustrup (https://dblp.org/pid/s/BjarneStroustrup) at DBLP Bibliography Server ✏
25. Bjarne Stroustrup (https://www.scopus.com/authid/detail.url?authorId=6603638056) publications indexed by the Scopus bibliographic database. (subscription required)
26. Stroustrup, Bjarne (2013). *A Tour of C++*. Addison-Wesley Professional. ISBN 978-0-321-95831-0.
27. Stroustrup, Bjarne (29 December 2008). *Programming: Principles and Practice Using C++* (1st ed.). Addison-Wesley Professional. ISBN 978-0-321-54372-1.
28. Stroustrup, Bjarne (23 May 2013). *The C++ Programming Language* (4th ed.). Addison-Wesley Publishing Company. ISBN 978-0-321-56384-2.
29. Stroustrup, Bjarne (29 March 1994). *Design and Evolution of C++* (1st ed.). Addison-Wesley Publishing Company. ISBN 978-0-201-54330-8.
30. Ellis, Margaret A.; Stroustrup, Bjarne (1 January 1990). *The Annotated C++ Reference Manual* (https://archive.org/details/annotatedcrefere00elli). Addison-Wesley Publishing Company. ISBN 978-0-201-51459-9.
31. Stroustrup, Bjarne (2 January 2020). "Book Covers" (http://www.stroustrup.com/covers.html). *stroustrup.com*.
32. Stroustrup, Bjarne (2 January 2020). "My C++ Standards committee papers" (http://www.stroustrup.com/WG21.html). *stroustrup.com*.

External links

- 📷 Media related to Bjarne Stroustrup at Wikimedia Commons
- 🔊 Quotations related to Bjarne Stroustrup at Wikiquote