Bjarne Stroustrup

Overview

Bjarne Stroustrup was born in Aarhusm Denmark, in 1950. He is an eminent Software Engineer who is most notable for designing and implementing the programming language C++ as well as being the author of "The C++ Programming Language" and many popular academic publications.

Education

Stroustrup holds a master's degree in mathematics and computer science from the University of Aarhus in his native Denmark (1975). He achieved a Ph.D in Computer Science for his work on the design of distributed systems, from Cambridge University, England (1979) where he is an honourable fellow of Churchill college.

Career

In 1979, upon completing his Ph.D and meeting his wife while studying at Cambridge, they moved to New Jersey to join the Computer Science Research Centre of Bell Telephone laboratories (later AT&T Bell Laboratories, currently Nokia Bell Labs). Stroustrup was head of the Large-Scale Programming Research department in AT&T Labs from its creation until late 2002. According to Stroustrup, this job was the ideal environment for him as there was a close connection between research and practical projects. Facilitating him the time to work on approximately 10 projects a year generating ideas and putting them to test in the real-world. Subsequently it was during these innovative years that he began the creation of C++.

Throughout Stroustrup's Career, he navigated the growth of C++ by his involvement in ISO standards, publishing seven books on C++ programming and writing many academic and popular papers.

In 2002 after 24 years of research, Bjarne went to academia becoming the College of Engineering chair in Computer Science Professor at Texas A&M University.

In 2014, Stroustrup decided to get back to solving real-world problems reviving his involvement in critical software development, by became the managing director of Morgan Stanley in New York City. This job entails him to provide technical help for "distributed systems, reliability, performance and speed of our systems, and coding guidelines for people writing C++ for the firm", (Stroustrup, 2016). He still holds this title to this day as well as being a visiting Computer Science professor at Columbia University teaching design using C++ code and building code to optimize infrastructure. He still retains a link as a distinguished research Professor at Texas A&M University.

Work & Influence

C++

During his early years in New Jersey while working for Bell Labs, Bjarne began creating C++. Bjorne was motivated by two prominent challenges "the complexity of what we need to do and the performance of how we do it"- *(Stroustrup)* and in order to solve these challenges he needed to deal with efficiency and complexity. This was the inspiration behind his design and development of C++.

It was based on C and inspired by Simula differing from these early languages as it provided a set of general and flexible abstraction mechanisms hence why it was originally called "C with Classes". Classes aim to reduce user difficulty by creating a clean, simple and organised interface to its users, hiding its representation and saving compilers the time of understanding the representation. C++ proved successful because it was close to the hardware and efficient allowing for a high level of abstraction. Its unique strengths are prominent in the areas of infrastructure and resource-constrained tasks.

It made abstraction techniques affordable and manageable for mainstream projects and hence was recognised quickly for it's potential to simplify the tasks of a software developer. Stroustrup has proven highly influential by using C++ as his tool, he has pioneered the use of object orientated generic programming techniques in areas where application efficiency is vital. Some of the many applications he has impacted are general systems programming, switching, avionics, simulation, scientific computation, graphics, user-interfaces, communications, embedded systems and financial systems (Stroustrup.com, 2017). Large applications where C++ is used to this day include being the building blocks behind Google's search platform and Amazon's web commerce platform.

More than two decades since C++ creation, it has become one of the most popular programming languages and is still widely used today. According to IEEE, C++ is in the top 4 most popular programming languages and it is estimated to have over 4.5 million users worldwide. The influence of this programming language has spread far beyond the community of C++, it has revolutionised the software industry. It has been used to build many systems that enhance our lives and has demonstrated a significant influence on later languages such as Java, C# and Fortran which make use of some of the features originally created for C++. It enabled software to be developed to far greater stages with technical features including generic programming, object orientation programming and general resource management at scale. All these techniques are in vast use today and have proved significant in the evolution of software development.

Stroustrup is actively involved in the creation of ISO standards, currently working on the standard C++17. He is still lecturing part time and publishing papers ensuring the languages continued development. C++ established a vital role in meeting the demands for scale, reliability and energy efficiency in coding and has provided a base platform for the progression of computer software.

<u>Research and interest</u>

He remains intact with the development of software, advising and investing in start-ups and continuing his research in the field of computer science. Two of the start-ups he is involved are RollApp which is a cloud computing app and IncludeOS is an open source library operating system. His research delves into the areas of distributed systems, design, programming techniques, software development tools and programming languages.

<u>Publications</u>

Stroustrup is the author of seven books teaching the language of C++ to users from programming beginners to advanced computer scientists. His most popular book "The C++ Programming Language" originally published in 1985 is the most widely read book of its kind having been translated into 19 different languages. Other noteworthy books he has published are "The design and Evolution of C++" and "Programming – Principles and practice using C++". These books are the first of their kind as they provide a different insight into what shapes a programming language from ideas and ideals to problems and practical constraints. Furthermore, he has written over 100 academic and popular papers and continues to teach the language he created today. C++ is arguably the most influential programming language of the last 25 years and his impact on the evolvement of software cannot be overlooked.

Personal life

As the current Managing Director at Morgan Stanley in New York, he lives nearby with his wife having raised two children. Their Daughter is a medical doctor and their son is a research professor in systems biology. According to Stroustrup's own website, his interests include general history, light literature, photography, running, hiking, travel and music.

Honours

- Fellow of the Association for Computing Machinery (ACM)

- Fellow of the Institute for Electrical and Electronics Engineers (IEEEF).

- ACM's Grace Murray Hopper Award (1993)

- Member of the US National Academy of Engineering 2004

- Sigma Xi's William Procter Prize for Scientific Achievement (2005)

- Aarhus University's Rigmor og Carl Holst-Knudsens Videnskapspris (2010).

- Elected to the Electronic Design Hall (2013).

- Faraday Medal from the Institution of Engineering and Technology (IET) (2017).

Quotes

Throughout my research of Bjorne, he comes across as a very quirky, fascinating character. I have included a few quotes which I feel exemplify his ideology as a software engineer simplifying programming tasks for others down the line.

"Design and programming are human activities; forget that and all is lost."

"When done well, software is invisible"

"Clearly, I reject the view that there is one way that is right for everyone and for every problem."

"Thus, the standard library will serve as both a tool and as a teacher."

"The standard library saves programmers from having to reinvent the wheel."

To end on a light-hearted note, even the man who invented one of the more challenging computer languages has trouble keeping up with technology.

"I have always wished for my computer to be as easy to use as my telephone; my wish has come true because I can no longer figure out how to use my telephone"

References

I consulted the following website and videos to build my biography of Stroustrup:

http://www.computerhistory.org/fellowawards/hall/bjarne-stroustrup/

http://www.stroustrup.com/bio.html

https://news.efinancialcareers.com/uk-en/267930/meet-the-morgan-stanley-md-who-invented-the-c-programming-language

https://www.morganstanley.com/profiles/bjarne-stroustrup-managing-director-technology

https://www.inspiringquotes.us/author/9196-bjarne-stroustrup

https://www.youtube.com/watch?v=JBjjnqG0BP8

http://bigthink.com/experts/bjarnestroustrup

https://yourstory.com/2013/12/bjarne-stroustrup-interview/