Biography of a software engineer

Radia Perlman

Radia Perlman is an American computer programmer and network engineer.

Early childhood life

Perlman was born in 1951 in Virginia and grew up in New Jersey. She comes from a technical background as both her parents were engineers who worked for the US government. Perlman had a flare for maths and science in school and was an outstanding student in all subjects. She also developed an interest in literature and music as she wrote poetry and played the piano. When she took a programming course in high school, it sparked her interest in a career that involved computers.

Education

Perlman enrolled at MIT, where she received her degrees of Bachelor of Science in 1973 and Master of Science in 1976, both in mathematics. In this era there were a limited number of female students, especially in the STEM fields.

While working under the supervision of Seymour Papert, Perlman developed a child-friendly version of the educational robotics language LOGO, called TORTIS. During research performed in 1974–76, young children programmed a LOGO educational robot called a Turtle.

After she graduated, Perlman worked on designing network protocols for Bolt, Beranek and Newman Technologies. There she first got involved with designing network protocols. In 1980, she joined Digital Equipment Corp. as a Consulting Engineer. Eight years later she obtained her PhD in Computer Science at MIT. Her

work focused on designing a computer network that would be resistant to malfunctions and improve the robustness and practicality of the “Network Layer”.

Career

The spanning tree algorithm and the spanning tree protocol (STP) are Perlman’s most famous inventions. Created in 1985 and thanks to STP, switched network environments are capable of connecting bridges and switches with multiple paths for data transmission redundancies. Without STP, a single frame looping on an Ethernet network would create out of control data traffic that would prevent communications of all other data. It transformed Ethernet from the original limited-scalability, single-wire CSMA/CD, into a protocol that can handle large clouds. She improved on spanning tree-based Ethernet by designing TRILL (Transparent Interconnection of Lots of Links), which allows Ethernet to make optimal use of bandwidth.

She also made large contributions to many other areas of network design, such as link-state routing protocols. While at DEC she also oversaw the transition from distance vector to link-state routing protocols. Link-state routing protocols had the advantage that they adapted to changes in the network topology faster.

In 1993 Perlman left DEC to work for Novell. In 1997 she started working for Sun Microsystems Inc. where she served as a Fellow, a prestigious honorary title for the company’s technical staff. Between 2010 and 2014, Perlman moved to Intel Labs, where she was also a Fellow and mostly worked on the design of various network routing and security protocols. In the meantime, apart from network security and protocols, Perlman’s interests included teaching and writing. She was Affiliate Professor at the University of Washington and has given lectures at Harvard University and MIT.

Perlman quotes

“The kind of diversity that I think really matters isn’t skin shade and body shape, but different ways of thinking”.

“Start out with finding the right problem to solve. This is a combination of ‘what customers are asking for’, ‘what customers don’t even know they want yet’ and ‘what can be solved with something simple to understand and manage’”.

“Actually, I hate technology! […] But the world would be a better place if more engineers, like me, hated technology. The stuff I design, if I’m successful, nobody will ever notice. Things will just work, and be self-managing”.

Awards and achievements

- National Inventors Hall of Fame induction (2016)
- Internet Hall of Fame induction (2014)
- SIGCOMM Award (2010)
- USENIX Lifetime Achievement Award (2006)
- Recipient of the first Anita Borg Institute Women of Vision Award for Innovation in 2005
- Silicon Valley Intellectual Property Law Association Inventor of the year (2003)
- Honorary Doctorate, Royal Institute of Technology (2000)
- Twice named as one of the 20 most influential people in the industry by Data Communications magazine: in the 20th anniversary issue (1992) and the 25th anniversary issue (1997). Perlman is the only person to be named in both issues.
- Fellow of the Association for Computing Machinery, class of 2016

Finally, to sum up her huge impact on science and technology, Radia Perlman received the Women of Vision Award from the Anita Borg Institute. Presented by Greg Papadopoulos, former Chief Technology Officer at Sun Microsystems, says this about Radia Perlman: “There are many people who claim to be the father of the Internet, but there is only one Mother and that’s Radia Perlman”.

References

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