

How to Educate a Computer Scientist

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Abstract

What can you expect a computer science graduate to know? If you had a chance to design a modern curriculum for a computer science program, what would you emphasize? Should a curriculum designed today be different from what you studied? The answer to the question of what to teach computer scientists evolves over time as technologies, applications, and requirements change. As software technology has rapidly spread through every aspect of modern societies, the challenge of educating computer engineers has taken on new form and become more complex and urgent. In this talk, I present the outline of an educational program for a complete software engineer. A new curriculum for computer science has been developed based on these ideas and started in October 2004 at the University of Lugano in Switzerland. The program emphasizes software design and group projects beginning from the first semester. I will highlight the novelties of the curriculum with respect to traditional ones. I argue that the new century requires such a radically new approach if computer scientists are to answer the new opportunities.

Vita

Mehdi Jazayeri is professor of computer science and dean of the Faculty of Informatics at the University of Lugano. He is also professor of computer science and heads the Distributed Systems Group at the Technical University of Vienna. He is interested in programming, software engineering, programming languages, and distributed systems. He has worked at both technical and management capacities at Hewlett-Packard Laboratories, Palo Alto, Synapse Computer Corporation, Ridge Computers, and TRW Vidar. He spent two years in Pisa, Italy, to set up and manage a joint research project on parallel systems between Hewlett-Packard and the University of Pisa. He has been an assistant professor of computer science at the University of North Carolina at Chapel Hill, adjunct professor at Georgia Institute of Technology, University of Santa Clara, and San Jose State University. He was a Fulbright Scholar at the University of Helsinki.

(1979) and a visiting professor at the Politecnico di Milano (1988). He was a principal investigator on several European projects dealing with software architectures and advanced distributed systems.

Mehdi Jazayeri is a Senior Member of IEEE, a member of ACM, the Austrian, German, and Swiss Computer Societies. He holds degrees from Massachusetts Institute of Technology (SB, 1971) and Case Western Reserve University (MS, 1973; PhD, 1975). He has been a consultant to the US Government and to multinational companies in the areas of software engineering, design, architecture, and processes.