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Sajal Das received the IEEE Computer Society's Technical Achievement Award this year, which takes note of outstanding and innovative contributions to the fields of computer and information science and engineering or computer technology.

He is director of the Center for Research in Wireless Mobility and Networking at the University of Texas at Arlington and was honored for his contributions to wireless networking. He has taught at UT Arlington since 1999, after serving as computer science Professor and Director of the Center for Research in Wireless Computing at the University of North Texas, Denton, since

1986. From 1988 to 1992, he served as a research scientist at the Institute for Informatics, Slovak Academy of Sciences, Bratislava, Slovakia.

He earned his PhD in Computer Science from the University of Central Florida, his MS from the Indian Institute of Science, Bangalore, and B.Tech and BSc in Physics from the University of Calcutta.

While in Savannah, Georgia, to receive his Technical Achievement Award, Dr. Das discussed his career with The IEEE Computer Society's Dick Price and described the role his association with the IEEE Computer Society has played in it.



Wireless Networking Expert

Sajal Das reflects on his career in research

DP: What has been your proudest career achievement to date?

SD: I'm very proud of being a teacher—working with the students, being the mentor of their research, and also doing my own research in cutting-edge technology.

DP: Could you describe some of those cutting-edge technologies?

SD: My current research is on wireless networks, mobile computing, sensor networks, pervasive computing, smart environments, and cybersecurity. That's my cutting-edge research now. In the past, I have worked also on grid computing, distributed computing, parallel processing, and the like.

Many of my students have done excellent research, so I share this honor with all my students and my colleagues who have contributed a lot to my research portfolio, helping me understand the intricacy of problems. I don't think it's individual research. It's team research, collaborative work. I have been very fortunate to have wonderful students, wonderful colleagues to work with. Many times I have taken the lead in defining the problems, but they have also contributed a lot in my success as well.

DP: When you were a youngster yourself, a young student, what drew you into the career that you ultimately chose?

SD: When I was a kid, my dad was an elementary school teacher. He never had college education, but he always wanted his children—all of my brothers and sisters—to have good education. I wanted to be a teacher, not necessarily a university professor. When I was doing my undergraduate studies in physics first, then I moved into computer science also, so I did double major in physics honors as well as computer science as an undergraduate. When I was in the fourth year of my undergraduate study, I thought that, okay, maybe I should go for graduate studies. That's so fun.

I pursued a master's degree at the Indian Institute of Science in Bangalore. I had no idea that I would be going for a PhD, but then when I was doing my master's thesis, I got my first paper published in *IEEE Transactions on Software Engineering*. That gave me really a good motivation that, yeah, research could be fun. My mentor, my thesis advisor, was also very encouraging, so I applied for my PhD study in the US and got admitted to Washington State.

While doing my PhD, I thought I should probably be a teacher, but in this case, a university professor. So that's what my goal has been from since childhood, to be a teacher. What I found is that a teacher is a lifelong learner. So it is this profession in which I have an opportunity to learn as much as I can. Of course, anybody can learn anytime, but here you deal with students all the time, you mentor young kids, and I feel very happy if I could help somebody to build a better career.

DP: As you mentor the students you have currently, where do you tell them the best opportunities are for a young person today?

SD: The most important thing for them is to build a solid foundation and develop problem-solving skills. Once they have that, they can adjust themselves in any environment that you leave them in. I say you can go for



industry, research labs, or teaching, depending on your passion, on what you want to do in the long run. Don't look for the next four or five years of your career. Look for 40 or 50 years of your professional career. I keep it open for them.

I have graduated 28 students so far, and six are working. Half have gone to academics and other half to research labs in industry. A couple of them also formed their own companies. Out of 26 master's thesis students that I have graduated, several of them have continued for their PhD, either with me or elsewhere. Most are pretty successful in industry jobs.

DP: You mentioned a thesis advisor. Is there one particular person who was most influential in getting you started in your career?

SD: I would say my dad. He studied up until the 10th grade, which was the highest school level available in his time, and then he became an elementary school teacher. He had a strong passion for learning and he really wanted for all of us to pursue higher knowledge.

And then of course at school level, I had a wonderful physics teacher, very inquisitive. I had one language teacher – I speak Bengali. Language is art, and unless you have good language skills, you don't have good communication. Science and technology alone will only give you so much comfort, so you need the art of life, right? I write poetry in Bengali.

DP: As you moved through your career, what was the smartest decision you have made?

SD: That would be difficult to say. Life takes different turns, turning in split seconds. I am always optimistic and what comes, I just take it as optimistically as possible. In my own life, I've seen what I wanted to do, but did not do it. I did something else. But what I went into also was equally good.

For example, I studied my physics. I wanted to be a nuclear physicist, but then when I was about to finish—that was the first time in my university, which was Calcutta University—they started the computer science program, back in 1980. Of course, computers are always very fascinating things. We used to watch movies and robots, and I thought, let me pursue this particular subject, computer science—it seemed very interesting. So I made the decision immediately—okay, let's study computer science.

There was an Indian philosopher in the 19th Century. His name is Swami Vivekananda. He had written books on education and also in science and religion. He has a profound definition of education, which really had great impact in me. The way he's described it, education is the manifestation of the perfection already in man.

He says that every individual has enormous potential, and it is a manifestation of that potential that makes people more successful, more perfect, be it mental, physical, spiritual, or anything else. As he described it, education should be not confined to books. It should be man-making education, character-building education. I try to actually implement his philosophy in my career, academic research or mentorship, or even service to the community.

I believe that we have a responsibility as educator or researcher to impart that kind of total education to the students, which is not restricted to microscopic or individual growth, personal or professional growth, but more on the collected good of the society. That is what we learn today, either in research, science, or technology, we have to give back to the community, because the whole community is responsible for the well-being and growth of our society. We have to translate that back.

Now, the translation could be in terms of technology transfer, which can build jobs, can invent new technology, or it could be educating people so that they

can be the leaders of tomorrow, tomorrow's innovators. Although I did not meet that philosopher, who passed away in 1902, I was tremendously influenced by his writing on education and then in distinguishing between science and this microscopic and macroscopic view of life.

DP: Along the way, have there been any missed opportunities or decisions you wish you could remake?

SD: It would be very unwise or foolish to say that I did not miss any opportunity, but the way I am, and I think my wife reminds me all time that how can you forget things—see, I'm always optimistic. If I miss an opportunity, I don't look back. I try to correct myself to understand why did I miss the opportunity so that it doesn't happen in the future.

DP: Do you have a current research project that you're most interested in right now?

SD: I have a lot of projects going on currently in academic research. One is smart environments, the designing and modeling of smart spaces, with applications to smart healthcare. And pervasive security—the security of infrastructures, critical infrastructures, security of our daily life—that kind of stuff. Most of this research is funded by the National Science Foundation.

I also have research projects on designing more efficient sensor network architectures. These sensors can be used in numerous applications, both civilian and military. I'm also working on some interesting projects funded by the Air Force Office of Scientific Research on securing organizational environments. Let's say we have information fusion going on across agencies—financial institutes, economic institutes, government, and all, right? These transactions are very complex. Information is dispersed all over the place and people are accessing it different levels. How do we provide security in an automated manner in such a cyberworld, where you can seek your environment as best as possible?

DP: How have you been involved with the IEEE Computer Society?

SD: My involvement at the IEEE Computer Society goes back to the early 90s. I have served in different capacities. I was vice chair of IEEE Technical Committee on Parallel Processing for two terms, like four years. I was vice chair of IEEE Technical Committee on Communications, and we made both of them very successful in terms of attracting other conferences, making them very healthy, especially TCCC, Technical Committee on Computer Communications with another colleague of mine.

I have founded two major conferences, one of them called IEEE WWMUN—the IEEE Symposium on the World of Wireless Mobile Multimedia networks. It's going to be held on the island of Kos in Greece. I'm the founding steering committee chair. I started this one as a small workshop in '98. In a few years' time, it had become a full symposium for fully sponsored by the IEEE.

I also co-founded another one called IEEE PerCom Conference--Pervasive Computing and Communications Conference. This year, it was in Galveston, Texas. Next March it will be in Manheim, Germany.

These are the two major conferences that I created. I have also served as general chair, program chair, and technical committee member for numerous IEEE Computer Society and IEEE conferences. I still serve as associate editor for the *IEEE Transactions on Mobile Computing* and for *IEEE Transactions on Parallel and Distributed Systems*.

I'm also very involved with the IEEE Fort Worth Chapter. We run a local conference called IEEE MetroCon conference.

DP: Do you have a final thing you would like to say?

SD: I have had wonderful experiences in my academic areas for more than 20 years. All of my students are part of my extended family, so whenever a student graduates, I tell my wife I have one more academic children graduating. I have academic grandchildren now, because my students, they have produced their own students.

Dissemination is the key. We have to disseminate, to discuss, exchange ideas, build new collaboration, build new networks—and that has far-reaching consequences. You write more papers collaboratively, you write more projects together, get more funding, have student exchanges. My involvement with IEEE—I published my first paper in the *IEEE Transaction in Software Engineering* years ago—has contributed a lot in my professional growth and my personal growth as well.