Worlds apart

CMU robotics expert came from home without electricity

By Mark Roth
Post-Gazette Staff Writer

At 47, the Dabbala Raj Reddy seems to be eons away from the dusty farming village in which he grew up in Southern India.

He's one of the world's leading computer scientists. He's the director of Robotics Institute at Carnegie Mellon University. He is the science director of the World Center for Personal Computation and Human Resource in Paris. And on Tuesday night, he received The French Legion of Honor medal from that nation's president, Francois Mitterrand.

Despite these honors, though, the soft-spoken professor can vividly remember his boyhood as the middle child in a rice-farming family of seven brothers and sisters.

They ate meat once a week in the good years, and once a month in the bad. There was no running water. There was no electricity. The nearest school was 10 miles away; and "even though we were well off within the village, we were poor by the standards here in America."

Largely because of these memories, Reddy has a special feeling of satisfaction from the work he is doing at the World Center for Personal Computation and Human Resource in Paris, the work for which he received France's highest civilian award in this week's ceremonies at Carnegie Mellon.

As the science director of the three-year-old center, Reddy is trying to find ways that computers can be used to improve the lives of poor people in France and in such developing nations as Tunisia, Senegal, and Chad.

Reddy and his colleagues already are bringing these words together- the sophistication of computers and the hand-to-mouth existence of illiterate peasants.

For instance, Reddy has just helped develop a computerized medical program for use in Chad.

Educated villagers there are receiving some basic paramedic training. They can then use portable, battery-operated computers to diagnose illnesses. By asking questions already stored in the computer and typing in the answers, the paramedics can get a diagnosis of the diseases such as tuberculosis or leprosy accurate 90% of the time.

Eventually Reddy hopes to develop computers that can "hear" the questions spoken by illiterate people and can then "answer" them in their own language through a voice synthesizer.

In this way, he says, computers will be able to offer you hope for the uneducated and disadvantaged in dealing with medical and agricultural problems that dominate their lives.

"For me, this is contributing solutions to the issues and problems that arise in those environments with the hope that something can be done for the people who are not able to help themselves," Reddy said yesterday

"It is more like a labor of love for me, and I'm sure we will want to do something for the environment from which we have come "

Reddy seems uncomfortable talking about his achievements and honors. He is much more eager to talk about his first loves - computers and the field of artificial intelligence, in which he is trying to create computers that can learn and think on their own.

He does not feel his dreams are one bit farfetched.

"You must remember that 20 years ago, when we were starting to use computers, we used to pay $100,000 for one computer that we can now carry around inside a calculator. Twenty years from now, it is not inconceivable that they may be a transistor radio sized package that we can put into a robot that allows you to see hear and think

"Look at it this way: if automobiles had improved at the same rate as computers, you would be able to go out today and buy a Rolls Royce for $2.50 and drive it at 50,000 miles an hour."

As director of the CMU's Robotics Institute, Reddy is overseeing two major types of research. One is to develop "factories of the future" - computerized manufacturing companies that can make several types of products from one day to the next with minimum manpower and maximum flexibility. The second is to develop sensor equipped robots that can be used in hazardous environments such as outer space or in contaminated nuclear plants.

The institute's funding comes 60% from industry, primarily the Digital Equipment Corporation, and Westinghouse; and 30% from the government primarily from Department of Defense and 10% from private funds.

Carnegie Mellon pays Reddy's salary, while the World Center pays his expenses for one week each month he spends in Paris.

Reddy, a calm, articulate scientist, is married and has two teenage daughters. He walks to work from his home in Squirrel Hill and his only real pleasure outside of work is reading historical novels. (His favorite author is James Clavell)

Reddy has risen to prominence not only because of his premiere talent but also because he was fortunate enough to get in on the ground floor of computer science.

He graduated with a bachelor's degree in engineering from the University of Madras, near his hometown, in 1958. Though he was especially strong in science and mathematics, he did not see his first computer until he went to Australia as an exchange student.

There at the University of New South Wales in Sydney, Reddy got a master's degree in technology and worked with a professor who was using one of the first large computers to solve huge mathematical problems

That led him to the employ of IBM Corporation, which was looking for bright young scientists to serve as advisers to its salesman. After four years with IBM in Australia, Reddy moved across the Pacific to Stanford University, where he obtained his master's and doctoral degrees in computer science.

He did his first experiments in the specialty for which he is now renowned - the development of sensors so that computers can hear and see.

Reddy came to CMU as an associate professor of computer science in 1969 and has worked his way up through the teaching and research ranks until he became the founding head of the Robotics Institute in 1979.

D. Raj Reddy
Age: 47
Residence: Squirrel Hill .
Duties: Director, Robotics Institute of Carnegie Mellon University; Chief Scientist, World Center for Personal Computation and Human Resource, Paris

Education: Bachelor's degree, engineering University of Madras , India 1958. Master's degree, technology, University of New South Wales, Australia 1961. Masters degree, computer science, Stanford University, 1964. Doctorate, computer science, Stanford, 1966.

Professional background: IBM Corporation, applied science representative, 1961- 64. Assistant professor, Stanford University, 1966 - 69. Associate and full professor computer science, Carnegie Mellon University, 1969- 1981. He has published more than 50 scientific articles.

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Dabbala Raj Reddy, in his CMU office.