IEEE

# Madison Section NEWSLETTER

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## Computer Networking: Recent Developments, Trends, and Issues
## IEEE Communications Society Distinguished Lecturer Series (WEBCAST)

**Date/Time:** Wednesday, January 26, 2005, 10:00 AM - 11:30 PM (please arrive at 9:45) NOTE DIFFERENT DATE/TIME

**Speaker:** Dr. Raj Jain, Co-Founder and Chief Technology Officer, Nayna Networks, Inc.; Adjunct Professor, Ohio State University

**Location:** Realtime Utility Engineers, 8417 Excelsior Drive, Madison WI
(next to AAA Building and across the street from WI Milk Marketing Board) - SEE MAP
NOTE DIFFERENT LOCATION

**Menu:** soft drinks and coffee (cost $2.00, free for student members)

**RSVP:** by January 24th to Les Schroeder via email (l.schroeder@ieee.org) or call 608.444.9144
This presentation will be limited to 25 participants, please RSVP early.

*Non-member guests are always welcome!*


We are in a networking age, where computer networking developments affect all aspects of life, technology, and industry. They have impacted education and research as well. The time between research and productization has narrowed. Over the last few years, hyping the impact of networking technology has lead to the so called "hype cycle of technology." After a general discussion of networking and its impact, we will discuss the recent developments in optical and wireless networking. In optical networking, the industry has moved away from core networking issues to metro and access issues. These developments will be described. In wireless networking, the aspects of broadband access, mobility and handoff are becoming important. These and other hot telecom issues will be discussed.

The talk is designed to entertain both networking and non-networking professionals.

Raj Jain is a Co-founder and Chief Technology Officer of Nayna Networks, Inc - a next generation broadband access equipment company in San Jose, CA. Until August 2002, he was also a Professor of Computer and Information Sciences at Ohio State University in Columbus, Ohio, where he is now an Adjunct Professor. Dr. Jain is a Fellow of IEEE, a Fellow of ACM and a Distinguished Lecturer for IEEE Communication Society. He is on the Editorial board of 4 technical journals and on Board of Technical Advisors to several companies. He has been the keynote speaker at many conferences including Concord Users Group Conference 2002, OpNetwork 2001, NREN Gigabit Networking Workshop 2000, Summer Computer Simulation Conference SCSC/SPECTS 2000, and International Conference on Networking (ICON) 1999. Based on his active participation in the computer industry, Dr. Jain was awarded 1999 siliconindia Leadership Awards for Excellence and Promise in Business and Technology. He obtained his PhD from Harvard University and is the author of 4 books and hundreds of papers, details of which can be found at <http://www.cse.ohio-state.edu/~jain/index.html>.

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## IEEE Madison Section Election Results

The annual officer elections for the IEEE Madison Section were held at the December 16th, 2004 monthly meeting. The slate of candidates was elected unanimously. Congratulations to the new officers for 2005:

| | |
|---|---|
| Chair: | Sandy Rotter |
| Vice-Chair: | Mitchell Bradt |
| Secretary: | Les Schroeder |
| Treasurer: | John Hicks |
| Mem. at Large: | Tom Yager |
| Mem. at Large: | Clark Johnson |

## Conquering Change: Cross-Discipline and the Need for a Fold-Out Business Card

*by Harry T. Roman*

Engineers change the world by applying technology judiciously. And like everything and everyone else in the world, engineers are affected by change.

At various stages of your career, you will almost certainly find yourself on the bottom of one learning curve or another, challenged to climb it quickly. The good news is that as problem solvers, engineers — probably more than any other professionals — are ideal candidates to deal with change.

I began my career doing the work of a utility power engineer, designing distribution networks and planning substation expansions. I exercised my new EE degree thoroughly during my first three years on the job.

One morning I was named project manager for the first truly graphical computer system for load flow and power system analysis. Knowing lots about power system analysis but absolutely nothing about graphics systems, I started up a very steep learning curve. No such system had been built before, so I had no textbooks to consult.

Looking back, I enjoyed working on a project where we were breaking new ground, and on which I had to "design and apply" simultaneously. I actually got quite a rush flying by the seat of my pants.

Hooked, I transferred to my company's newly formed R&D group, where I got involved in a variety of emerging technologies and switched trains of thought constantly. The ambiguity factor was exponentially increasing. I quickly learned the fine art of sanity checking and my share of back-of-the-envelope calculations.

It wasn't long before I faced my second big learning curve. Again it came as a total surprise. My departing R&D group leader recommended that I take on her major project — assess the potential for

solar energy applications in the state of New Jersey. I had a $1 million budget, three years to complete the project, and a 10-member task force to help put demonstration units in the field.

What does an EE know about heat transfer, solar energy system design and integration with HVAC systems? Back to my old college I went, to take courses in solar energy. Books? What books? My courses were professor notes and some makeshift handbooks, tempered by what I was learning every day in the field. I became a hybrid EE/ME.

Our team did the job in two years instead of three, and my company began offering solar water heating systems for sale to customers. Guess who put the marketing plan together and trained the installers? That's right; now I was talking to customers, visiting homes to look at installation potential, and doing the marketing thing. Talk about learning! I was now an EE/ME/IE hybrid. What would I put on my business card?

A few years later, I fashioned my own learning curve, this time with mobile robotics. The devices could be applied in our nuclear plants. I went back to school to learn about mobile robots, but again, no textbooks. Ten years later, robots became commonplace in many nuclear power plants, as did some early work we did in artificial intelligence and knowledge-based systems. The effort now made me an EE/ME/IE/Nuclear/Robotics/Knowledge Capture engineer. I was certainly going to need larger business cards.

> *Embrace change at the very least. Don't let it get out in front of you.*

Today I make my living developing and introducing the concept of the smart utility that uses massive amounts of intelligence to achieve integrated decision-making on the distribution grid. I am back at my old college again, this time designing state-of-the-art intelligent microsensors to gather data and information.

**THE MORAL OF THE STORY**

Here I stand, with a "gaggle" of skills and techniques learned over almost 35 years. I still enjoy flying by the seat of my pants. I am comfortable with ambiguity. And I still look for learning curves to create. I tried to make the most of the increasing and accelerating change that I believe will characterize the life of young engineers.

How will you handle change in your career? My advice to you is this:

- Embrace change at the very least. Don't let it get out in front of you.
- When change is inevitable, use it to question old paradigms and create new opportunities for yourself and your company.
- Become comfortable with uncertainty, ambiguity and some seat-of-the-pants flying. It will happen anyway, so get used to it.
- Return to school often to learn new things. Never stop growing.



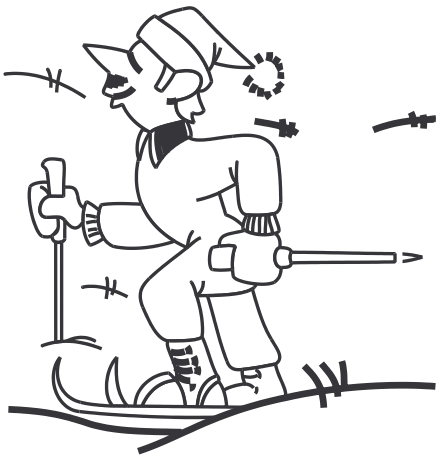
- It's perfectly OK to be empirical until you get smarter and further along in those first-of-a-kind projects. Trust your judgment and seek the wisdom of team members.
- The only thing as inevitable as change will be the intermixing and blurring of disciplines. Always seek opportunities to cross-discipline yourself. It builds quite an interesting and unique resume. Strive to be both broad and deep.

No, I never did get an MBA, but I did get an MS in environmental engineering. What can I say?

I should have patented the fold-out business card.


*Harry T. Roman is a senior member of the IEEE, a senior technology consultant for PSE&G, and an adjunct graduate faculty member at New Jersey Institute of Technology. He can be reached at todaysengineer@ieee.org.*

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**For more information, contact John Hicks at (608) 233-4875 or jhicks@wisc.edu.**

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