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Live, Learn, and Thrive
Klipsch School of Electrical and Computer Engineering

Q & A with Dr. Satish Ranade

By Hamid M. Rad, Office of Strategic Initiatives

Dr. Satish Ranade

Klipsch School of Electrical and Computer Engineering, within the College of Engineering, is one of the jewels of NMSU. It offers B.S., M.S., and Ph.D. degrees in Engineering and attracts students from all over the world. Its faculty and research staff are continually involved in externally-funded research & creative activities. In 2008, the Klipsch School’s research expenditures exceeded $1M with funding sources that include NASA, the Department of Defense, the National Science Foundation, and other federal and commercial agencies. In order to obtain more information about the school and its recent activities, we talked to Dr. Satish Ranade, one of the long time faculty members in that school.

1. Dr. Ranade, when did you join NMSU?

I joined NMSU as a faculty in 1981.

2. What courses do you teach?

I teach a three undergraduate course sequence in Power Systems, occasionally other Electrical Engineering (EE) classes, and graduate classes in Power Systems (EE332, EE431, EE493, EE531, EE532, EE533, EE544, EE211, EE311).

3. Would you please talk about your professional memberships?

I’m the senior faculty member of Klipsch School of Electrical and Computer Engineering, senior member of IEEE Power and Energy Society, and Vice Chair of the Transmission and Distribution Committee.

4. What are your research interests?

My general interest is in electric power system modeling, analysis and control, and renewable energy. My current research focus is in the emerging area of microgrids. It is anticipated that a part of this nation’s energy portfolio will be served by small distributed energy resources – usually renewables – located close to loads. Often the generation will be owned by the customer. The challenge is the interconnection, integration and management of these resources, and both technological and public policy solutions are needed. Microgrids promise increasing use of renewables, positive impact on energy and environmental cost and an increase in reliability. The challenge is to make things happen in a safe manner and in a way that benefits customers, the utility industry, and society.

5. Does NMSU have any partnerships or collaborations with the power or electric industry?

The power industry has supported NMSU for over 40 years in many different ways. Principal among these is the industry funded Electric Utility Management program which provides MSEE Fellowship support for students. This program anchors our undergraduate and doctoral efforts in the power area. We work very closely with the sponsors on research projects and internships. Graduates have gone on to become CEOs of major companies and hold leadership positions in industry.

"New Mexico can establish itself as the leader in transforming the U.S. electric energy infrastructure."
6. What sorts of funding is supporting your efforts?

Our work is currently sponsored by USDOE, EPRI, CEC and NSF. We are also participating in the State of New Mexico’s Green Grid/Smart Grid efforts and are seeking funding to start implementing customer driven microgrids in New Mexico.

7. From your perspective what role can New Mexico play in the nation’s development of smart grids?

With its abundant renewable resources, forward-looking electric utilities and cooperatives, growing renewable industry, and national laboratories and universities, New Mexico can establish itself as the leader in transforming the U.S. electric energy infrastructure.

8. Can you talk about student labs in the department?

Our instructional laboratory, created with support from EL Paso Electric Co, and Air Force Office of Scientific Research (AFOSR), has conventional capabilities for experimentation with power system components. The components can also be tied together to simulate a power grid. This allows us great flexibility in both teaching and research. We are hoping to use this laboratory to demonstrate and study microgrid operations.

In addition, with support from Sandia National Laboratories our lab serves senior design classes each semester. Many of the subsystems for putting together a grid or microgrid, as well as the photovoltaic system and interfaces, were the result of these senior design projects.

9. How do you see Klipsch School of Electrical and Computer Engineering changing in the future?

The Klipsch school has, as has every EE department, gone through substantial changes in terms of curricula owing to advances in technology and the explosion of knowledge. New courses have been added and curricula revised every three to five years, that I have been here. I expect we will remain challenged to keep up with the changing world. I believe that our graduate and research programs will expand, which will help us advance our curricula. I see the current trend of growth taking off in the coming years.

Some things change and some things remain the same. NMSU is a premiere land grant institution, a ‘best-buy’ – but it isn’t only because our tuition is reasonable. We are a best buy because of the ‘total’ quality of education. As a land grant we not only provide excellence in education but we make it accessible to all. I am particularly proud of being a Klipsch school faculty because of its dedication and open-door policy toward students. I see this dedication unchanging.

10. What is your message to students who might be interested in pursuing graduate degrees in Electrical Engineering?

As we go forward, a graduate degree has become essential in the engineering workplace. Fifty percent of the seasoned engineering workforce will retire in the next ten years. However, there will not be a one-for-one replacement for them. As technology advances work requirements change and the engineers will be expected to solve far more complex problems. On the other hand, opportunities for entrepreneurship, innovation and risk-taking will be plentiful. I would encourage every undergraduate to pursue a graduate degree, however, they need to make sure they mix their engineering skills with a good mix of business, economics, ethics and entrepreneurship classes. They need to go to the ball games and the recitals at Atkinson center. This is the recipe for the U.S. to regain its leadership in what engineering does best—making life better!

Major research laboratories in the Klipsch School include:
- Advanced Speech and Audio Processing Laboratory
- Center for Space Telemetering and Telecommunications Systems
- Electric Utility Management Program
- Parallel Architecture Research Laboratory
- The VLSI Program at NMSU
- R.L. Golden Particle Astrophysics Laboratory
- Control Systems Research Laboratory
- The Rio Grande Institute for Soft Computing (RioSoft)

For additional information about NMSU’s Klipsch School visit http://www.ece.nmsu.edu.
NMSU’s Institute for Energy and Environment (IEE) held its 19th annual design contest. April 5-8 at NMSU’s Pan Am Center, the contest brought together 31 teams from 21 universities nation wide.

Participating teams included the Calvin College, California Polytechnic State University, Clarkson University, Dalhousie University, Duke University, Louisiana State University, Michigan Tech, Mississippi State University, Montana Tech, Ohio University, Roger Williams University, South Dakota School of Mines and Technology, University of California – Riverside, University of Idaho, University of New Hampshire, University of New Mexico, University of Washington, West Virginia University, Western New England College and Worcester Polytechnic Institute, and NMSU.

This year’s tasks included:

1. Sulfate Removal from Groundwater Associated with Sulfide Mineralization
2. Photovoltaic System Performance Indicator
3. Brackish Water Pretreatment
4. Tomato Stem Scar and Tissue Removal
5. Wind-2-H20: Converting Wind Energy to Mechanical Energy for Water Treatment

Water was a major theme in this year’s competition.

The competing teams consisted of both graduate and undergraduate students from various disciplines, including engineering, food science, technical writing, health, science and related fields. Some universities had participated in this contest before. For some, like Calvin College, it was their first time. “My experience with NMSU and with the Design Contest was truly a great one,” says Sarah Evans, a Chemical Engineering student at Calvin College. “Not only did I enjoy working on the project with my team members, I also really enjoyed the chance to see what the other teams had worked on. Getting to know the students from other schools was an excellent experience. Also, everyone at the competition and at NMSU was so welcoming and helpful when we needed it, especially since we were a first-time participant.”

The teams were required to conduct research, develop and demonstrate innovative solutions to the task issues that they were responding to. Each team gave a 15-minute oral presentation to a panel of judges and answered questions prior to the poster sessions. They also submitted a written report of their work. Their solutions were evaluated based on the their understanding of the issues, practicality of the methods, novelty, reliability, and cost effectiveness of the solutions.

Dr. Abbas Ghassemi, director of the IEE, was very pleased with the competitions, stating “The best and the brightest university students from around the globe continue to impress me every year with their ideas,
discipline and vision.”

This year’s winners were:

**Task 1:** 1st place, tie, University of New Mexico: $1,500 and Montana Tech: $1,500
2nd place: Michigan Tech: $1,000
Judges Award: Special Performance by One, Mississippi State: $500

**Task 2:** 1st place: Duke University: $2,500

**Task 3:** 1st place: University of Washington: $2,500
2nd place: University of New Mexico: $1,000
Special Judges awards for Outstanding Freshman Performance: Calvin College and Worcester Poly Tech: $500 each

**Task 5:** 1st place: University of Idaho: $2,500
In lieu of 2nd place there were 3 special awards:
Best presentation of Concept: University of New Hampshire: $500
Best Transfer of Wind to Mechanical Power: Dalhousie University: $500
Most Innovative Concept: Duke University: $500

**Task 6:** 1st place: Clarkson University: $2,500
Best Poster: Mississippi State University: $500

**ORAU Award**
Duke University for Task 2: $2,500

**Outstanding Faculty Award**
Tied: Jenna Jambeck – University of New Hampshire: $1,500
Linda Riley – Roger Williams University: $1,500

**Intel Award for Innovation**
Roger Williams University, Task 5: $2,500

**Terry McManus Award**
Breanne Bornemann – University of California -Riverside: $1,500

“By competing in the WERC contest, the Calvin College team faced challenges that cannot be effectively duplicated on campus,” says professor David Wunder at Calvin College. “This is what I most appreciate about the WERC competition. Our team was measured against top-notch teams and judged by experts in the water industry. The competition took Calvin's team to a level of learning that is invaluable and otherwise not possible as part of a conventional campus experience. I am invigorated by the WERC competition and am exceedingly grateful for the organizers of the contest and excited to see more Calvin teams embrace the challenges so wonderfully packaged within the WERC competition.”

For additional information about NMSU’s 2009 Design Contest visit [http://www.werc.net](http://www.werc.net).

This year’s contest coincided with Institute for Energy and Environment’s 10th anniversary of its Pollution Prevention (P2) outreach and training in the State of New Mexico.
Once again NMSU’s Model U.N. team was recognized for its outstanding performance and position papers in this year’s international competition in New York City. To truly appreciate the importance of winning these awards, one needs to be there and experience firsthand the intensity of the National Model U.N. competition.

Model United Nations is an academic simulation of the United Nations with the goal of educating graduate and undergraduate students about effective communication and multilateral diplomacy. About 300 universities from all over the world participate in this event. Each year universities are assigned a country to represent. The teams consist of bright students who are studying diplomacy and politics. Prior to attending the conference, they study all the aspects of the country that they represent: its history, culture, economy, and political positions. In an attempt to fully represent that country they often meet with its Permanent Mission to the United Nations and learn about their agendas and strategies.

This year NMSU’s Model UN delegation represented Finland. Having done their preparatory research for this assignment, the team met with a staff member from Finland’s Permanent Mission to the United Nations to obtain information about that country’s international diplomatic goals and strategies. NMSU’s delegation was led by Dr. Jason Ackleson, faculty advisor from the Department of Government for the past eight years. He educates his students in the art of diplomacy and international affairs and takes pride in their excellent performance each year.
After six days of intense research, negotiations, and caucusing NMSU’s team managed to cooperatively draft resolutions with solutions to key international challenges such as sustainable energy, drug trafficking, conditions of the refugees around the world, security and cooperation in Europe, and other important issues. NMSU enjoys an outstanding international reputation for success at the NMUN conference and at regional conferences. The delegation has won awards at the last five NMUN conferences, including “Outstanding Delegation” and “Best Position Papers” awards in 2008 and 2009. These are the top award categories at the competition, constituting only five to ten percent of the schools who attend. Several NMSU team members have been selected as committee chairs and others have earned “Best Delegate” honors at the conference. In 2008, the NMSU Model UN team made its first international appearance at the inaugural NMUN competition in Xi’an, China.

“The team continued its record of excellence at the National Model UN competition, equaling the very top distinctions we earned last year,” says Dr. Ackleson. “In doing so, they learned much about important world events, the art of diplomacy and negotiation, and a greater understanding of different cultural and political perspectives about the world,” he added.

A video recording about this year’s competition is available at: http://www.youtube.com/watch?v=Yj5m-y1R6Pw

The program is open to all students, regardless of their field of study and is supported by academic coursework offered by the Department of Government. This program is the only one of its kind in New Mexico and West Texas. For more information visit http://www.nmsu.edu/~govdept/modelun. Dr. Jason Ackleson can be reached at jackleso@nmsu.edu.
The 21st annual Euprymna-Vibrio Powwow was held at at New Mexico State University March 13th - 14th.

Department of Biology faculty Maria Castillo and Michele Nishiguchi were the organizers of this year’s event, which included approximately 36 participants representing nine of the 11 laboratories that work on the Vibrio system.

The Euprymna (Bobtail squid)- Vibrio system was initially used as a model to understand the interactions in a mutualistic association, but has been further developed to examine aspects of bacterial biofilm production, hemocyte activation, toll regulatory signaling, experimental evolution, phylogeography, microbial allelopathy, nitric oxide sensory components, oxygen consumption, and immunological complement.

Dr. E. Sam Loker, Director of the University of New Mexico COBRE and Biology Department Head, was the guest speaker. Dr. Loker’s presentation, entitled “Snails and Trematodes: Similarities and Contrasts with squid-Vibrio associations” covered the many aspects of both mutualistic and pathogenic associations between molluscan hosts and their symbionts.

“One of the greatest aspects of the system is the cooperation that all labs have with each other” states Dr. Nishiguchi. “We get together yearly and talk about what is going on in our research, find some common ground, form more collaborative projects, and get new ideas from different aspects…either squid or bacterial. I think it all started with both Ned (Ruby) and Margaret (McFall-Ngai) working together with expertise from both ends of the symbiosis,” adds Dr. Nishiguchi.

NMSU is fortunate to have two of the 11 principle investigators working on the system here in Las Cruces. Dr. Maria Castillo is an immunologist who studies how complement works in innate immune systems of molluscs, and Dr. Nishiguchi works on the evolution and microbial ecology of Vibrio-Bobtail squid associations.

Next years Euprymna-Vibrio Powwow will be hosted by Dr. Karen Visick at Loyola Medical School in Chicago, Il.
Renewable Energy and the Environment is expected to be available in book stores in June 2009. This book, which is edited by Dr. Abbas Ghassemi, director of NMSU’s Institute for Energy and Environment (IEE), is the second in a series. The vision for the series is twofold: 1) Bringing a sense of application and reality to complex energy, natural resources and environmental issues, and 2) exemplify the excellence the Institute has been a part of for almost 25 years. While IEE is a relatively new entity, its subsets have greater than 25 years of combined ongoing efforts culminated under IEE.

Other pending books in the Energy and Environment Series include: Solar, Geothermal, Hydro Power, Biomass/Biofuels, and Nuclear.

For more information about this book contact Therese Shakra at mtshakra@ad.nmsu.edu.

Dr. Robert Durán’s Latest Article

English Department Graduate Students Present at Albuquerque Conference

Graduate students from the English Department recently presented their work at the Southwest Texas Popular Culture and American Culture Association annual conference, in Albuquerque. The conference, held Feb. 25-29 and drawing scholars from all over the country and the world, featured 10 English department graduate students presenting on a variety of topics—from the theoretical readings of the popular television show Lost and the southwestern roots of hip hop, to the language of open source software and post-9/11 zombies. Graduate students presenting their work included Josh Osborn, Jennifer Bracken, Bethany Jade Fields, Quimin Dong, Meghan McGuire, Seth Meyers, Ryan Lang, Amy Dalzell, Becki Graham, Carl Wilhoite. English department Assistant Professor Jen Almjeld also presented her work on Twitter.
Dr. Spencer Herrera
Assistant professor of Languages and Linguistics edited the Casa de las Américas, a highly respected journal published in Havana, Cuba. This issue is a dossier focusing on Chicano literature, which speaks volumes of the genre’s growth and influence in the field of Latin American literature. Aside from serving as the guest editor, Dr. Herrera wrote and translated the Prologue to Richard Rodriguez’s seminal work, Hunger of Memory for the dossier. To view the online version of “Presencia Chicana.” Casa de la Américas 252 (2008) click here.

Dr. Herrera can be reached at (575) 646-7876.

Dr. Gary W. Roemer
Associate Professor of Fish, Wildlife and Conservation Ecology’s recent publications are:


Dr. Roemer can be reached at (575) 646-3394 or groemer@nmsu.edu

Dr. Frank A. Ward

Dr. Ward can be reached at (575) 646-1220 or fward@nmsu.edu
We are often asked why many proposals fail. Here are some of the reasons:

1. Wrong funding organization targeted
2. Failure to follow the instructions in the RFP
3. Key concepts/approaches not explained in detail
4. Outcomes of research or program not provided
5. Duplication of service or solution unclear
6. Proposed rationale/approach not innovative or flawed
7. Blanket proposals or ‘fishing expeditions’
8. Sustainability – the ultimate return on investment
9. Unrealistic budgets, timelines, milestones
10. Factually inaccurate, poor writing style and grammar

Things to remember when writing proposals:

1. Clearly defining your project (impact/outcomes)
2. Knowing your purpose and determining what you need
3. Identifying the right funding source
4. Locating and studying the guidelines (the RFP)
5. Contacting the funder’s program officer
6. Knowing the submission deadlines for all materials
7. Updating your timeline as you develop your proposal
8. Starting early if you need letters of support, authorizations, supporting documents, etc.
9. Asking for help!

For assistance with your proposal development efforts contact the Office of Strategic Initiatives
(575) 646-9209, osi@research.nmsu.edu