



elec  
E + E  
uc la

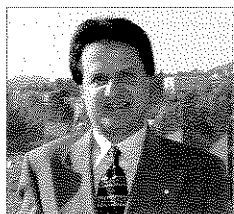
University of California  
Los Angeles

News

Vol 1, Issue 1

Sigma: Showcasing UCLA's Electrical Engineering Department

Winter 2001



I am very excited to present to you the first edition of our new Department Newsletter. Our goal is to make it informative, interesting, and fun to read. It is a snapshot of what happened in recent months in our Department. Our goal is to publish it quarterly. One of my former M.S. student, Mr. Mounitra Chatterji, has been the key individual in bringing this

Newsletter into existence. I thank him for his dedicated and creative work.

The symbol "Σ" for our Newsletter is the manifest of the power of summation in adding up all the required ingredients that make a successful educational institution. The asset of any educational institution is its faculty, students, alumni and staff. The product of any educational institution is its well-balanced students, scientific papers, books, theses, patents and awards. I invite you to visit our new website at [www.ee.ucla.edu](http://www.ee.ucla.edu) and learn about the significant accomplishments of our Department in the aforementioned areas.

## CONTENTS

- o Faculty Update 2
- o Alumni & Student Corner 4
- o Recent Faculty and Student Awards 6
- o 2001 Symposium and Affiliates program information 7
- o Photo Gallery 8

It is my strong belief that we as a human race are at a very dynamically and historically important crossroad where science and technology are ever-increasingly becoming responsible for the success, longevity and harmony of mankind on this planet and beyond. As a highly reputed EE Department in the nation, I have created the slogan that, "At the dawn of this new millennium which is bound to evolve and progress by advances in science and technology, our Department has the mission of being one of the major players in this progress and our graduates will be the future leaders in technology."

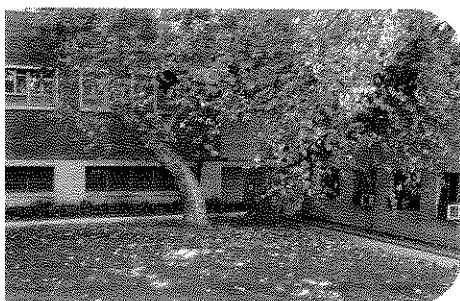
We invite you to take the time to get to know us better and identify the best way that allows you to join us in our mission of becoming the very best EE Department. We are certain that we are creating a productive environment for our faculty, students and staff to flourish. Please keep in touch with us, share this Newsletter with others and make sure to provide us with your constructive feedback.

Yahya Rahmat-Samii  
Chair, UCLA EE Department



*It is difficult to say what is impossible, for the dream of yesterday is the hope of today and the reality of tomorrow.*

—R. H. Goddard



# Alumni Profile



Prof. Kathleen Virga  
UCLA Class of 1996  
Currently with University of Arizona

I started as an accounting major and took some computer programming courses. I realized that accounting would be very boring for me. I was initially intimidated to major in EE, but knew I was good at math and physics, so I just went for it. I have not regretted it since. During my Ph.D. studies I thought I might quit and go to law school. I am very glad I stayed in EE, especially since it's great to see the wireless revolution and know how it can impact our lives in the new millennium.

One of the benefits of attending UCLA was seeing the diverse faculty working together: seeing Profs. Rahmat-Samii, Abidi, Pottie, and Samuelli work jointly on the DARPA funded project for a low-power wireless transceiver. I also saw several UCLA professors

join forces on MURI projects, such as the one with Itoh, Yablonovich, and Rahmat-Samii. When I interviewed at the UofA, I could see that there were several professors that were interested in similar collaborations. A group of us subsequently won a grant from NSF on wireless information networks. The joint effort is much like the one I saw at UCLA. I get very large job satisfaction from having good colleagues I can work with.

*What were some of your favorite courses (outside of your major field in Electromagnetics)?*

It is good to get out and see beyond EE. Two of my most interesting courses were my minor field courses: one was EE 172, Prof. Joshi's laser course.

I did not know how a laser works and the course goes through the basics very well. Although I have not worked with lasers, I find them quite interesting and have an appreciation of what is involved. The other course was a mathematics course I took from Prof. Seth Putterman in the Physics department. It was a difficult course, discussing techniques such as the method of multiple scales. The most exciting thing about Prof. Joshi's and Putterman's course is how good scientists and engineers can utilize mathematics to help reveal engineering phenomena. It is interesting to see researchers identifying new particles that are detected in plasma fields for instance, just based on what types of solutions have occurred mathematically in the Schrodinger wave equation. The particles only appear for an extremely short period (femtoseconds), but the idea of their existence is first found in the mathematics. It is exciting to see how mathematics truly is an important language to explain how things work.

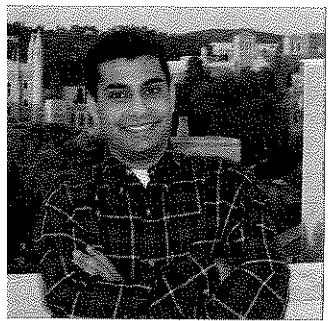
plain how things work.

*Any advice to new Ph.D.s entering academia?*

Academia is very different from industry. First, in academia you do not have a boss. Nearly all decisions affecting your career such as tenure, acceptance of journal papers, proposal funding, are made by committees of your peers, and the committees change all the time. *Get a close se* Academia is changing. 15-20 years ago is proposal rejected, help you put it all i the only one this h

Kathleen  
Virga's  
Profile

## Student Profiles



Rahul Singh  
Graduate Student

Both my parents are electrical engineers by education, as well as my sister. Growing up, our dinner conversations were centered in the engineering and science fields. Unfortunately I was not able to add much, since I was still young. My sister went on to MIT for her masters in electrical engineering, and I was beginning to think of what I wanted to do with my life. I came into the sciences from a blend of pure curiosity and wanting to be able to partake in the family dinner conversations. But as I was getting older, my family's dinner conversations were shifting in focus from engineering to political events and business. Eventually, our dinner conversations had very little engineering speak; ironically just as I was able to intel-

ligently talk about engineering.

As I was nearing graduation from college, my family was for the most part completely out of engineering and entirely into management. This instilled the desire to be always in a well-rounded atmosphere; as opposed to being in an environment that is centered in electrical engineering. This belief grew in parallel to my family's dinner conversations, from being completely engineering related to being well-rounded conversations. By senior year of my undergraduate education, I knew I wanted to go to graduate school, but I began to worry that I would be entrapped in an environment that was solely engineering.

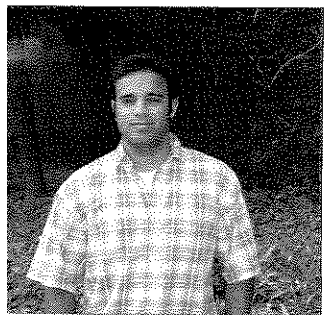
Once I came to visit UCLA, my worries were dis-

pelled. I saw all the interdisciplinary research that was being done, and also saw the School of Engineering was part of a larger world that it interacted with. In contrast, the other universities I visited felt as though their schools of engineering were islands rather than integrated into the entire university.

And now, as a graduate student at UCLA in electrical engineering, I am working on a project under Dr. E.R. Brown (adviser) with collaboration from Dr. J. Woo, Dr. C.R. Viswanathan, and Dr. D. Yoon from the School of Dentistry. Our project investigates imaging in human teeth using deep ultrasound (>100 MHz). Being part of this project has fulfilled my desire to be involved in many areas of electrical engineering as well as outside of engineering. Further, my major area of interest lies in image processing, and I have also pursued my minors in the telecommunications and the embedded

systems area. As a graduate student I have been exposed to very good teachers and wide varying areas of electrical engineering. Finally, as an example of my classes also reflecting well-balanced material, I was in EE231A Information Theory: Channel and Source Coding. Professor R. Wesel presented the material such that it was not purely focused on telecommunication but was geared to the fundamentals of Information Theory—allowing students to apply the knowledge to our other fields of research.

These are a few examples of the wide range of exposures that UCLA Electrical Engineering Department has provided me. Now, as I am deep in my graduate career I am finally able to partake in my family's dinner conversations and bring a point of view that is well rounded, in large thanks to being at UCLA.



Orlando David Furtado  
Undergraduate Student

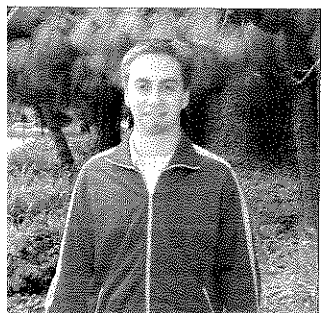
At an early age I felt that I wanted to become a doctor or a research scientist that would find the next cure for cancer. It seemed like a good thing to do: everyone goes to the doctor some time in life, and cancer is an ailment that needs curing. Besides, having the chance to help people is always something I wanted to do. This all changed in high school when I was faced with AP Biology and AP Chemistry. At first I was really excited to take these science classes and begin the path toward becoming a doctor. About half way into the classes, I started to realize that they re-

quired a lot of memorization and I wasn't using my analytical skills. The idea of having to memorize countless pages of biology information, when I could just look up the information didn't make it too exciting.

Throughout high school, I consistently did well in math and was able to excel in my math classes. I enjoyed using my math skills throughout high school by being on the school math team and doing well in the math section during the Academic Decathlon contest. The lack of using my analytical and math skills is what made me wonder if I wanted to be a doctor anymore.

So, there I was, almost at the end of high school and I didn't know what I wanted to do. Fortunately, my brother had graduated a few years before and was already a student at UCLA, studying electrical engineering. He showed me around the campus and showed me Engineering I, IV and Boelter Hall. These sites had an effect on me and made me start to seriously think of becoming an engineer. So I decided to take some physics classes my last year in high school, and right away, I enjoyed just about everything in physics. It gave me a chance to use my math and analytical skills while still learning concepts that I can apply to the real world. I think this was my true calling to join the engineering field; it gave me the chance

for a real challenge and learn concepts applicable to everyday life. As for joining the Electrical engineering department, I knew about UCLA's reputation in the field and the sight of the campus and facilities made me want to become a part of this prestigious school.



Tai Weininger  
Undergraduate Student

I always knew I wanted to be involved in scientific exploration and application, I just wasn't sure which field would suit me best. In high school, I was constantly disappointed by the fact that we were introduced to topics that were so incredibly intertwined (such as physics and chemistry) yet were forced to study them individually without any attempt to connect them.

Choosing a major to study in college proved a difficult task. Knowing that I loved calculus, chemistry, physics, biology and computers I decided to pursue chemical engineering, a subject which my college counselor told would fit me best. Even more difficult would be choosing a university that would "best pre-

pare me for the field."

Although I was accepted to a few schools which the faulty yet blindly-followed U.S. News and World Report ranked as "better" than UCLA, it only took one statistic to convince me that UCLA would be the school for me: The enormous and scientifically diverse faculty. After browsing the SEAS web site I was amazed by the incredible multidisciplinary projects that took place at UCLA and knew I had to be involved. My second year made this dream come true and also convinced me that my true path to scientific enlightenment would come through the study of electrical engineering.

The summer following my first year I came across

a newspaper article regarding the research being done by Dr. James Heath and Dr. J. Fraser Stoddart in the area of molecular electronics.

Combining electronics, organic chemistry, physical chemistry, and tunneling physics in one research area was an incredible idea, one that seemed to break all the rules. Within a week of starting school I convinced Dr. Stoddart to allow me to research in his laboratory. Not only did I learn more about chemistry and physics in that laboratory than I had in any previous college course, I was also given the opportunity to associate with incredible minds, share my ideas (which proved successful), and take on the responsibility of working on my project semi-independently. It was through discussion with these professors and post-docs that I realized my passion for understanding physics at the atomic and electronic level,

which seems to be the basic level from which all science develops. Following this realization I decided to immerse myself in the world of electrical engineering by becoming an officer for both the Institute for Electrical and Electronic Engineering (IEEE) and Eta Kappa Nu (the Electrical Engineering Honors Society). The Electrical Engineering department at UCLA has also introduced me to the most interesting minds I have met such as Dr. Roychowdhury, Dr. Yablonovitch, and Dr. Levan. If I had to choose one thing I like the best about my experience at UCLA, I would have to say it is the diverse and interesting opportunities for students.