

Alumni Reflections

This is the first in our series, Alumni Reflections. This semester we feature Dr. Chen Tsai, distinguished College of Engineering graduate. Dr. Tsai reflects on enduring relationships built, and fond memories from his time at Utah State. Tsai earned his Master of Science in Electrical Engineering in June, 1961. *Read more...*

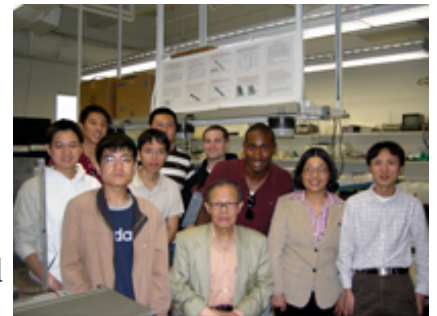
Distinguished Utah State University Alumnus was a Sharp Shooter



Dr. Chen Tsai, distinguished professor of electrical engineering and computer science at the University of California, Irvine (UCI) since 1980 was appointed UCI Chancellor's Professor in January 2008, and bestowed the 2007 Distinguished Alumnus Award for Research Achievement by National Taiwan University (NTU). NTU has the reputation as the most prestigious university in Taiwan.

Dr. Tsai graduated with his Masters of Science in Electrical Engineering from Utah State University (USU) in June 1961 and received his Ph.D. in Electrical Engineering from Stanford University in December 1965. His career began at San Jose State University and Lockheed Palo Alto Research Center. He then accepted a faculty position at Carnegie-Mellon University in July 1969, and was awarded a chair professorship in 1980. He has received a large number of honors and awards including, membership in the Academia Sinica (Taiwan), the Russian Academy of Engineering Sciences, recognition as a Fellow of five prestigious professional societies (IEEE, OSA, AAAS, SPIE, and Russian Popov), and most recently the award of the UCI Chancellor Professorship. Tsai received these honors for his research accomplishments in Integrated Optics and Ultrasonics science and technology.

While much of his time is devoted to research, he also teaches full-time. He has always cared deeply about teaching, and educates his students to cultivate independent thinking and master the basics so that they can apply them intelligently and creatively. He has a reputation for being a caring, enthusiastic, and demanding teacher, and won the UCI School of Engineering Instructor of the Year Award as well as the first and only "Hall of Fame Professor" an honor bestowed by the graduate student body of the EE Department. Photo at right is Tsai's current research group, with Shirley Tsai standing in the front row.



Silicon Photonics has recently become one of the hottest areas in research and development worldwide because of its many real world applications. Dr. Tsai's present research on Silicon-based Photonics and Ultrasonics include: (i) a robust and efficient coupling device that is essential for



interfacing between single-mode optical fibers and silicon-based integrated opto-electronic chips that has demonstrated great potential for applications to advanced fiber optic communication,



signal processing, and sensing systems. (ii) A new miniaturized ultrasonic nozzle, seen at left (MEMS-based Silicon Ultrasonic Nozzle) that has produced monodisperse micron-sized droplets that will have a variety of applications such as pulmonary drug delivery and nano-electronic and –photonics device fabrication.

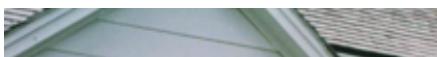
When asked what he would say to encourage undergraduate and graduating high school students to investigate a career in electrical engineering and research, Dr. Tsai says, “I would urge the undergraduates and high school students to identify their personal strengths and talents early and use them to pursue their interests and passions. For those interested in exploring a research career in electrical engineering, I would highly encourage them to take basic courses in mathematics, physics, materials, biology, and computers in addition to electrical engineering, and to participate in research as early as possible.”

Tsai has many fond memories of his two-year graduate study at Utah State University, especially of memorable winter scenes as pictured, bottom right. He particularly remembers how friendly and helpful the people he met and interacted with were. Tsai took a chartered flight for students going to the United States from Taiwan, and landed at the Seattle airport on September 14, 1959. After staying overnight at the home of a couple from Taiwan, he and two female students whom he met on the flight took the same Greyhound bus and headed for their respective universities: USU, Brigham Young University, and University of Nebraska. During the stop in Portland the three bought some fruit in preparation for the long bus ride. At the time of re-boarding, Tsai was unexpectedly dispatched to a separate bus that would take a shorter, northern route to Logan. As a result, he started the bus ride to Logan friendless and fruitless. Tsai recalls,



“Riding alone, hungry and homesick, in a large bus with only a small number of silent passengers in the desert under the bright moonlight was a truly unique and unforgettable experience.” Later in the journey, a junior high student boarded the bus and initiated a conversation; he was so kind and patient with Tsai’s broken English. The student even insisted on buying him a chicken sandwich when the bus made a lunch stop in Pocatello, Idaho. “You can imagine how delicious the chicken sandwich was to me. From the conversation I figured half a year later that the student must be from a Mormon family.”

Like other foreign students, Tsai was invited to the homes of USU faculty and other American families for Christmas and Thanksgiving dinners, and other activities hosted by the International Student Center. This was a great help in the transition to life in the





US, and life in Utah in particular. The graduate program in the EE Department was already making significant growth under the leadership of Professor Larry S. Cole as Chairman, and Professor Clayton Clark as Graduate Program Director. Tsai recalls: “During weekdays Professors Cole and Clark routinely walked together to the Student Union in the afternoon for a coffee break. Back then without thinking that they could also order soft drinks or simply fruit juices, and ignorantly interpreting “coffee break” literally, I innocently wondered why my two respected Mormons professors drank "*coffee*”.

Tsai recalled, “The graduate student body had about 10 domestic and foreign students from India, Pakistan, Iran, Japan, and Taiwan. All of us shared a large office and were cordial and friendly with each other. Some American classmates had parties in their apartments and invited the foreign classmates to join them. They also took me to Salt Lake City to watch the Aggie-Utah football game in which Merlin Olsen (former NFL Rams star) played. It was like a big family. Professor and Mrs. Cole invited graduate students to their home for dinner and games afterward. The photo above shows Tsai with Professor and Mrs. Cole at their home.

Tsai says many of his classmates called him “Cow Boy” after they learned he had watched many American Cowboy movies during his high school and college years in Taiwan. He can still remember the excitement when one of his graduate classmates handed him a cowboy hat, a bullet-studded belt, a shotgun and a pistol, and took him to the local rocky hill top for target shooting. He said, “With the help of a magnified viewfinder and my steady young hands, I was able to shoot sharply (at least according to my classmate). It was truly a most memorable and exciting experience.” See Tsai, the Sharp Shooter in the photo above!



“I benefited a great deal from many professors by taking courses they offered or by serving as their teaching assistant and grader: Larry Cole, Clayton Clark, Doran Baker, Bruce Watkins, Bill Jones, Duane Chadwick, Bill Horsely, Bob Heybone, Arnold Fitchum, and Burt Embry of the EE Department, and Joe Elich and Jean Sarafin of the Mathematics Department.”

Tsai’s faculty mentors at USU include Larry Cole, Clayton Clark, and Doran Baker. Tsai commented that Larry Cole, the key architect, head of the EE Department for many years, and an Associate Dean for the College of Engineering under Dean Peterson during his later years, was not only an outstanding academic leader but also a talented teacher from whom Tsai took several

courses in Network Theory. “Professor Cole was such an inspiring teacher! His lectures were always delivered with clarity, enthusiasm, and authority, and often with subtle jokes judging from the big laughs I heard.”

Tsai noted that Cole was a generous mentor, and continued to encourage and inspire him after his graduation from USU and subsequent graduate study at Stanford University. He was always pleased



to hear from Tsai, and was proud of his accomplishments. Dr. Tsai and his wife Shirley named their son Larry after Professor Cole, and the family has fond memories of visiting him and his wife Lucy in Logan after his retirement. Larry Cole was a beloved professor to many of his former students. At a reception in honor of him at the Tsai’s residence

in Irvine, former students working in the neighborhood and their spouses enjoyed a very warm mini-reunion with him and Lucy. Subsequently, the couple and another former graduate student, Fred Brownell and his wife Barbara, took a special trip to visit and pay tribute to the Coles and other former professors from Logan, as seen in the photo above. The enduring teacher-student relationship between Cole and Tsai has carried over to their extended families. The Tsai’s continue to keep in touch with Margie Cole Gardner and share fond memories of her parents.

Clayton Clark, a major contributor to the graduate program, taught Tsai in a course, Microwaves Engineering, which prepared him well for his Ph.D. study on Microwave Electronics at Stanford University. Tsai remembers Clark’s unwavering confidence in him and support for his graduate study at Stanford. Tsai recalled, “During the winter of 1975, I fell on icy pavement on the USU campus and broke my right ankle on my way to giving a talk at the EE Department. Professor Clark and his wife Helen graciously took me into their home and took good care of me for an entire week. I am forever grateful for their kindness and hospitality.”

Doran Baker, one of the founding architects of the acclaimed Space Dynamics Laboratory at USU, taught Tsai Electromagnetic Theory. Baker, then known as the newest and youngest Physics Ph. D from the University of Utah, was a beginning Assistant Professor full of enthusiasm, drive, and energy in both his research and teaching. He adopted the classical but advanced book by Panofsky and Phillips of Stanford as the text for the course. His well-organized lectures were supplemented with class notes typed by his wife Kathy. As hard as it is to believe, Tsai still has those typed class notes even after so many relocations.

Tsai explains, “Knowing that I was interested in having a research career, Professor Baker suggested that I read a Physical Review article by Leo Esaki on the subject of Tunnel Diodes. (Dr. Leo Esaki

was bestowed the Nobel Prize in Physics in 1973.) I was quite discouraged when I found that I could not even follow a single sentence in the paper. Fortunately, Professor Baker patiently explained to me that a research paper is a report on new findings which normally resulted from a long period of hard work, and often by a team. He also told me that with diligence in looking up the references cited and perseverance, the paper would eventually become less and less intimidating. Professor Baker played an important role in maintaining my interest in an academic and research career. I have mentored my students in the same way.”



All members of Tsai’s family are involved in academic or research careers. His wife Shirley is a professor of Chemical Engineering at California State University, Long Beach. Tsai repeatedly acknowledges Shirley’s unconditional support and assistance in his academic life. The couple helped instill a love of research in their two children as evident in the photo at right. Daughter Jeanne and son-in-law Brian are both Associate Professors in the Department of Psychology at Stanford University. Their son Larry and daughter-in-law Wendy are both medical doctors engaging in research on pulmonary and infectious diseases in Boston.

“I always feel blessed and fortunate to have chosen USU for my graduate study. The two years I spent there were certainly one of the most memorable and fruitful periods of my life. I am forever grateful to all the professors and classmates as well as the families who generously offered mentorship and friendship. I am very pleased that my Alma Mater has since grown so much, and under the leadership of Dean Scott Hinton, the College of Engineering continues to grow in quality and reputation.”

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