

Submitted to IEEE SLTC Newsletter by John Hansen, Dept. Head of Electrical Engineering (Univ. of Texas at Dallas).

Philip Loizou, Pioneer in Signal Processing for Cochlear Implants and Speech Enhancement passes away at 46

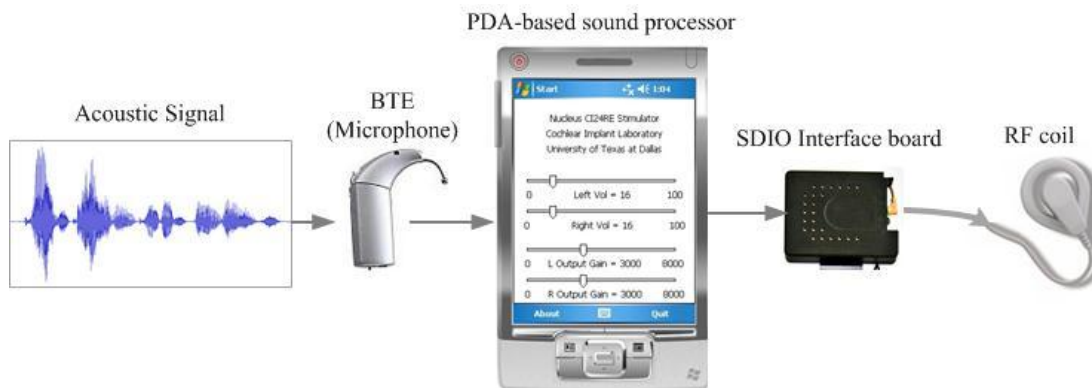


It is with sadness that the Dept. of Electrical Engineering, Univ. of Texas at Dallas (USA) reports that Prof. Philipos Loizou, a Professor of Electrical Engineering and pioneer in the fields of hearing aids and speech enhancement, and whose work has helped restore partial hearing to countless people, passed away on Sunday, July 22, 2012 due to cancer. He was 46, and is survived by his wife and 11 year old son.

Philipos C. Loizou received the B.S., M.S., and Ph.D. degrees from Arizona State University (ASU), Tempe, AZ, in 1989, 1991, and 1995, respectively, all in electrical engineering. From 1995 to 1996, he was a Postdoctoral Fellow in the Department of Speech and Hearing Science, ASU, where he was involved in research related to cochlear implants. From 1996 to 1999, he was an Assistant Professor at the University of Arkansas at Little Rock, Little Rock, AR. He later moved to join the Department of Electrical Engineering, University of Texas at Dallas, Richardson, TX, where he helped co-found the Center for Robust Speech Systems (CRSS) in the Jonsson School and directed the Speech Processing and Cochlear Implant Labs within CRSS. He served as Professor of Electrical Engineering and held the

Cecil and Ida Green Chair in Systems Biology Science at UT Dallas.

Philip Loizou was an internationally known leader in signal and speech processing, speech perception and cochlear implant research. He formulated advancements in both signal processing cochlear implant devices for electrical stimulation of the inner ear profoundly deaf people. His algorithms also helped improve the performance of cochlear implants by programming the device to operate more effectively in diverse listening environments. More recently, he developed a research platform that enables smartphones and personal digital assistants (PDAs) to interact with cochlear implants and optimize users' listening experience by controlling stimulation parameters using touch screen user interface. Smartphone application processes the acoustic signal using novel sound processing algorithms and produces electric stimuli in real-time. This has led to quick development and evaluation of novel research ideas and algorithms for noise suppression, music perception and speech enhancement resulting in better listening experience for implant users. This interface was approved by the U.S. Food and Drug Administration (FDA), and Loizou was overseeing a clinical trial on the interface with more than a dozen collaborating universities, medical centers, and laboratories.



“He was one of the first persons to explore specific speech enhancement algorithms that directly improve intelligibility – previously believed not to be possible,” said Dr. John Hansen, head of the Department of Electrical Engineering, Univ. Texas at Dallas. “More than his research, Philip was a true scholar – always looking to make contributions which would help improve the quality of life of people with hearing loss.”

Loizou attributed much of his success to his students. “I’ve had very hardworking and dedicated students,” he said earlier this year. “Without them, I find it’s difficult for me to progress in my research so I owe a lot of praise to them.”



He has served as principal investigator (PI/co-PI) on over \$9.4M in external funding in his career from U.S. National Institutes of Health, U.S. National Science Foundation, Texas Instruments, Cochlear Corporation, U.T. Southwestern Medical Center, U.S. Air Force, Starkey Corp., Advanced Bionics Corp., and collaborated with many groups, having received the NIH Shannon Award in 1998. He was known for mentoring his students and helping mentor other faculty members in their quest to obtain research support from the NIH.

“He sought out collaborations which would later become some of the most profound contributions in the field,” Hansen said. “In addition to his work, he was a valued colleague, mentor and academic citizen. In true Philip style, he always brought a careful, thoughtful approach to all he did and made all around him better.”

“There is a lot of research one can do to make cochlear implants more natural for patients, and easier for them to use”, was another comment Philip shared with his collaborator Nasser Kehtarnavaz (Professor, Electrical Engineering).

During his career, he graduated 8 Ph.D. and 15 MSEE students. He has published 93 Journal papers (primarily in *The Journal of the Acoustical Society of America* and IEEE journals as well as in other journals such as: *Ear and Hearing*; *American Journal of Audiology*; *Speech Communication*; and *Hearing Research*), 54 peer-reviewed conference papers, 5 book chapters, and 3 textbooks including: *Speech Enhancement: Theory and Practice*, Taylor and Francis, Boca Raton, FL (2007); *An Interactive Approach to Signals and Systems Laboratory* (Austin, TX: National Instruments), with co-authors Kehtarnavaz, N. and Rahman, M. (2008); and *Advances in Modern Blind Signal Separation Algorithms: Theory and Applications*, Morgan & Claypool Publishers (with co-author Kokkinakis, K. (2010)).



Philip was an elected member of the IEEE Speech-Language Technical Committee (SLTC) (2006-09) for the IEEE Signal Processing Society, and served as member of the Organizing Committee for IEEE ICASSP-2010 (Dallas, TX; USA) overseeing Tutorials. He also served as Associate Editor during his career for *IEEE Signal Processing Letters* (2006-08), *IEEE Trans. on Speech and Audio Processing* (1999-02), and most recently *IEEE Trans. Biomedical Engineering* and *International Journal of Audiology*. He was elected to the grade of Fellow of the Acoustical Society of America for his work on cochlear implants and speech enhancement.

Loizou grew up on the Island of Cyprus in the Mediterranean Sea. He enjoyed outdoor activities with his family including hiking, nature, playing/coaching soccer, and especially fishing with his 11-year-old son, Costakis. He is also survived by his wife, Demetria whose background is also in speech and hearing. They were married for 18 years and treasured their common Greek Cypriot culture including dance and regular trips to visit family and friends in Cyprus.

In honor of Philip Loizou’s contributions to the field and his commitment to help improve the quality of life of people with hearing loss, the Department of Electrical Engineering, University of Texas at Dallas, has established a Memorial Scholarship Fund in support of his son, Costakis Loizou (which will be available through UTDallas Marketplace). If you are interested in contributing, please visit the online Scholarship location:

https://ezpay.utdallas.edu/C20239_ustores/web/store_main.jsp?STOREID=156

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