William Mong Distinguished Lecture Series

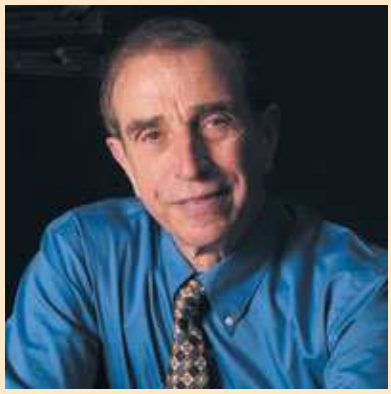
FACULTY OF ENGINEERING, THE UNIVERSITY OF HONG KONG

Sampling Sampling

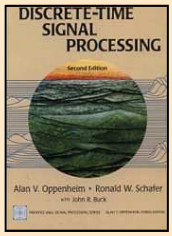
Date: March 27, 2008 (Thursday)
Time: 6:00–7:15 pm
Venue: Wang Gungwu Lecture Hall,
Graduate House, HKU, Pokfulam Road
Registration: http://engineering.hku.hk

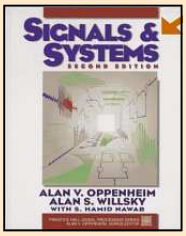
Professor Alan V. Oppenheim

is Ford Professor of Engineering and a principal investigator in the Research Laboratory of Electronics at the Massachusetts Institute of Technology. He received the S.B. and S.M. degrees in 1961 and the Sc.D. degree in 1964, all in electrical engineering, from MIT. He is also the recipient of an honorary doctorate from Tel Aviv University.



In 1964, Professor Oppenheim joined the faculty at MIT. Since 1967 he has also been affiliated with MIT Lincoln Laboratory and since 1977 with the Woods Hole Oceanographic Institution. His research interests are in the general area of signal processing and its applications. He is coauthor of the widely used textbooks *Discrete-Time Signal Processing* and *Signals and Systems*. He is also editor of several advanced books on signal processing.





Dr. Oppenheim is a member of the National Academy of Engineering, a Life Fellow of the IEEE, and a member of Sigma Xi and Eta Kappa Nu. He has been a Guggenheim Fellow and a Sackler Fellow. He received a number of awards for outstanding research and teaching, including the 1988 IEEE Education Medal and the 2007 IEEE Jack S. Kilby Signal Processing Medal as well as other teaching and research awards from the IEEE and at MIT.

Digital processing of analog signals naturally requires a representation of continuous-time signals as a discrete-time sequence. The most common representation of this type is based on the Shannon-Nyquist sampling theorem which provides an exact representation for bandlimited signals sampled at a sufficiently high rate but leads to aliasing error when the signal is under sampled. In this talk a number of other approaches are discussed to obtaining discrete-time representations that avoid or mitigate the effects of aliasing. These include other basis expansions such as bilinear sampling and wavelets, and modified sampling strategies such as non-uniform sampling and randomized sampling. The use of randomization in filter and array implementation and its relation to randomized sampling will also be discussed.