

IEEE SCV Signal Processing Society

Date: Nov 8th 2004
Title: Nonlinear adaptive systems
Speaker: Tokunbo Ogunfunmi, Ph.D, Associate Professor, Dept of Elect Eng, Santa Clara Univ.

Location: National Semiconductor Credit Union Building (Building 31), 955 Kifer Rd., Sunnyvale (Near the intersection of Lawrence and Central Expressway);

Coordinates: N37deg 22.464' W122deg 00.272' (WGS84);
http://maps.yahoo.com/maps_result?ed=Lz2FO.p_0TpVKFWBuA124OtTr9dn&csz=Sunnyvale%2C+CA&country=us

Directions: Take 101 to Lawrence Expressway. Head south on Lawrence to Kifer (past Central). Turn right on Kifer. Go 0.5 miles on Kifer and turn right into the Credit Union parking lot. Entrance is on the back side of the building.

Time: 6:30pm: Fast Food & drinks (\$1 Donation Recommended towards Refreshments)
7:00pm: Announcement
7:05pm: Talks starts

Abstract:

Nonlinear models are the correct models for several naturally-occurring phenomena. Lots of problems encountered in the real world involve noise and distortion due to physical processes that are time varying and nonlinear. These cannot be accurately characterized by linear fixed transfer functions.

However, engineers have largely avoided the area of nonlinear systems partly because of the limitations of the analytical tools at the disposal of the engineer and partly because the education of engineers emphasizes linear systems for which there have been a myriad of analytical tools developed over the years. Emergence of new analytical tools and faster computer processing power can now make nonlinear system realizable and usable in practice.

This talk, will discuss the application of truncated Volterra model for realizing nonlinear adaptive filters, which presents two major drawbacks namely, no exact method of isolating the individual Volterra operator exists for the measurement of Volterra kernels of a given system and secondly, problem concerns the large eigen-value spread which results in slow convergence speed and large mis-adjustment especially for the gradient-based nonlinear adaptive algorithms. It will be followed by applications of nonlinear adaptive systems based on the nonlinear Wiener model. The particular polynomial to be used is determined by the characteristics of the input signal we're required to model. The advantages of this method will be discussed with several examples comparing the performance of both methods.

Biography:

Tokunbo Ogunfunmi, is an Associate Professor of Electrical Engineering and the Director of the Signal Processing Research Lab. at Santa Clara University, Santa Clara, CA 95053. His research areas are digital and adaptive signal processing, VLSI design, multimedia communications and artificial neural networks.

He is a Senior Member of the IEEE. He was the IEEE SCV SPS Program Chair (1996/97) and he is currently a member of the Steering Committee of the IEEE SPS SVC. Dr. Ogunfunmi received his Ph.D. in Electrical Engineering from the Stanford University, Stanford, CA.