

HOWARD UNIVERSITY LECTURE SERIES IN SIGNAL PROCESSING

Date: March 30

12:30-2:00

Place: Blackburn Center,

Howard University

Speaker:

**Professor Al Bovik
Center for Vision and Image Sciences
The University of Texas at Austin**

AM-FM Models: New Image Representations

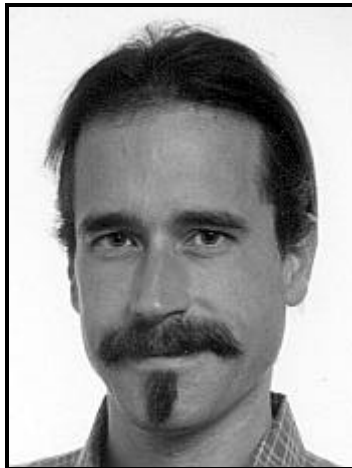
In this talk I will describe new signal models that are appropriate for analyzing signals that contain nonstationary or spatially varying patterns. The so-called AM-FM Models, or Modulation Models, are applicable to all kinds of multimedia signals: speech, images, video, sound. Because of my background and interests, I will focus on image signals. Signals or subsignals that benefit from this approach have been variously described as locally narrowband, locally quasi-monochromatic, locally sinusoidal, locally stationary. In the talk I will motivate and develop a signal model using sums of amplitude- and frequency-modulated (AM-FM) functions. The analysis proceeds by finding methods for extracting the AM-FM components of the signals (demodulation). A wavelet-based approach is found to seamlessly solve the problem. We conclude with applications in computing surface shape from images using AM-FM analysis, computed depth from stereo images using AM-FM analysis, and analyzing fingerprint patterns using AM-FM analysis.

FOR MORE INFORMATION AND/OR DIRECTIONS, CONTACT

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Dr. Alan Conrad Bovik



Al Bovik is currently the Robert Parker Centennial Professor in the Department of Electrical and Computer Engineering, at the University of Texas at Austin, where he is the Associate Director of the Center for Vision and Image Sciences. His current research interests include digital video, image processing, and computational aspects of biological visual perception. He has published over 300 technical articles in these areas and holds two U.S. patents. He is also the editor/author of the *Handbook of Image and Video Processing*, published by Academic Press in April of 2000.

Dr. Bovik was named Distinguished Lecturer of the IEEE Signal Processing Society in 2000, received the IEEE Signal Processing Society Meritorious Service Award in 1998, the IEEE Third Millennium Medal in 2000, the University of Texas Engineering Foundation Halliburton Award and is a two-time Honorable Mention winner of the international Pattern Recognition Society Award for Outstanding Contribution (1988 and 1993). He is a Fellow of the IEEE and has been involved in numerous professional society activities. Right now he the Editor-in-Chief of the *IEEE Transactions on Image Processing* and serves on the Editorial Board of the *The Proceedings of the IEEE*. He was the Founding General Chairman of the *First IEEE International Conference on Image Processing*, held in Austin, Texas, in November, 1994.