

Biography

Shihab Shamma is a Professor of Electrical and Computer Engineering and the Institute for Systems Research. He is also a professor in the Neuroscience and Cognitive Sciences program and the Bioengineering Graduate program. He is a Fellow of the Acoustical Society of America. His research deals with auditory perception, cortical physiology, role of attention and behavior in learning and plasticity, computational neuroscience, and neuromorphic engineering. One focus has been on studying the computational principles underlying the processing and recognition of complex sounds (speech and music) in the auditory system, and the relationship between auditory and visual processing. Another aspect of the research deals with how behavior induces rapid adaptive changes in neural selectivity and responses, and the mechanisms that facilitate these changes and control them. Finally, signal processing algorithms inspired by data from these neurophysiological and psychoacoustic experiments have been developed and applied in a variety of systems such as hearing aids, speech and voice recognition, diagnostics in industrial manufacturing, and underwater and battlefield acoustics. Other research interests include VLSI implementations of auditory processing algorithms, and development of robotic systems for the detection and tracking of multiple simultaneous sound sources. All the above projects will benefit enormously from noninvasive examination of cortical mechanisms in humans.