Recognition of Fish Species in Underwater Video Sequences

Seminar talk by

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Hosted by Dr. Georgios C. Anagnostopoulos

Abstract

Underwater imaging systems are currently being used by many scientists within the National Marine Fisheries Service (NMFS) to observe, identify, and quantify living marine resources. The Southeast Fisheries Science Center uses such systems to access populations of reef fish in the Gulf of Mexico. Processing of image sequences is typically performed by human analysts who review the sequence and transcribe their observations. The manual nature of this analysis is time consuming and labor intensive; a twenty (20) minute segment of video data may require an entire workday for a human to analyze.

Currently, the Electrical Engineering department and the Physics department at University of New Orleans (UNO) are collaboratively working on a project with the objective to develop image processing algorithms that are capable of automating the analysis of underwater video sequences for the identification of specific fish species. The techniques investigated in this project deal with shape description (Fourier Descriptors), classification (Neural Networks), and object tracking (Kalman Filters). This talk presents some relevant results obtained from the UNO team’s previous work, as well as some current developments.

Biographical Sketch

Dr. Dimitrios Charalampidis has received the M.S. and Ph.D. degrees in Electrical Engineering from the University of Central Florida in 1998 and 2001, respectively. Since 2001, he has been a faculty member in the Electrical Engineering department at University of New Orleans. Currently, he is an Associate Professor and the Associate Chair of the department. His research interests include image processing, pattern recognition, and their applications, including remote sensing image analysis and medical imaging.