Image Analysis Seminar

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AΛΣvision: Multiscale sparse representations and microlocal analysis for visibility improvement of underwater video and our journey from math to commercialization

Monday, April 2, 2018
2:30PM–3:30PM
Room 646 PGH

Abstract: This talk has two parts. The first is more mathematical and presents how we can use a non-linear operator utilizing a multiscale 2-D wavelet transform to address illumination neutralization which is a process of generating a surrogate light neutral image of a scene. We prove that with the operator we use we can achieve almost light neutrality and then we can show what we maintain the microlocal structure of the image of a scene, practically regardless of illumination.

The second part demonstrates how we use this method to improve the visibility of underwater video. Water turbidity is a frequent impediment for achieving satisfactory imaging clarity in underwater video and inhibits the extraction of information concerning the condition of submerged structures. Ports, rivers, lakes and inland waterways are notoriously difficult spots for camera inspections due to poor visibility. This is essentially the same type of problem we see when we have poor or uneven illumination of a scene. We will close with sharing with you some of our experiences in the effort to commercialize this technology, as AΛΣvision, without UH support, but with a lot of hope and hard work, clearly outside our professional experience. We hope that the audience will see a different professional pathway emerging from our experience. The talk is open to all graduate students and interested faculty and it will be accessible to all.

Pizza, soft drinks, courtesy of Lolaark LLC, where the invisible becomes visible.

This seminar is easily accessible to persons with disabilities. For more information or for assistance, please contact the Mathematics Department at 743-3500.