



Pixel Club

You are invited to attend a lecture by

הנכם מוזמנים להרצאה של

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Technion

בנושא:

Model-Based Adaptive Non-Local Means Image Denoising

Image denoising is used to find the best estimate of the original image given its noisy version. The Non-Local Means (NLM) denoising algorithm compares pixel neighborhoods within an extended search region in the image. Each pixel value is estimated as a weighted average of all other pixels in this search region, such that pixels with a similar neighborhood are assigned higher weights. This denoising approach refers to Additive White Gaussian Noise (AWGN). The participation of dissimilar pixels, which may be included in the extended search region, in the weighted averaging process, degrades the denoising performance. To eliminate their effect, researchers suggest creating an adaptive search region that excludes those pixels. These suggested methods are parameter dependent and involve heuristics. In this research, we present a novel model-based method that extracts a set of similar pixels in the search region of each pixel, using the statistical distribution of the NLM dissimilarity measure. Our approach does not require any parameter setting and provides better results than other compared adaptive search region approaches. The proposed scheme was also compared to the standard NLM and was found to provide better performance both quantitatively and visually. The model-based scheme was also integrated into the BM3D state-of-the art denoising scheme, such that the computational complexity of the original BM3D is reduced while denoising results remain comparable. Besides AWGN, we have also applied our approach to denoise Poisson noisy images with both the NLM and the BM3D denoising schemes.

* M.Sc. Research under the supervision of Prof. David Malah and Dr. Meir Barzohar.

* סטודנטית לתואר שני בהנחיית פרופסור דוד מלאך ודר' מאיר בר-זוהר.

The lecture will take place on Tuesday, 22/4/2014
at 11:30 in room 1061
Electrical Eng. Building
Technion City

ההרצאה תתקיים ביום שלישי, 22/4/2014
בשעה 11:30 בחדר 1061
בבניין הפקולטה להנדסת חשמל
קריית הטכניון

כיבוד קל יוגש לפני ההרצאה

