

SE&T Colloquium Series-Winter 2016

Speaker	Dr. Arundhati Bagchi Misra Department of Mathematical Sciences
Title	<i>Speckle denoising model using nonlocal similar neighborhoods</i>
Abstract	<p>Image denoising is among the most fundamental problems in image processing. A large range of methods covering various fields of mathematics are available for denoising an image. The initial denoising models are derived from energy minimization using nonlinear partial differential equations (PDEs). The filtering based models have also been used for quite a long time where the denoising is done by smoothing operators. The most successful method among them was the nonlocal means proposed by Buades, Coll and Morel in 2005. Though the method is very accurate in removing noise, it is very slow and hence quite impractical. In 2008, Gilboa and Osher extended some known PDE and variational techniques in image processing to the nonlocal framework. The motivation behind this was to make any point interact with any other point in the image. Using nonlocal PDE operators, they proposed the nonlocal total variation method for Gaussian noise. Based on this, a nonlocal PDE based speckle denoising model has been developed earlier. The model is faster than nonlocal means but still much slower than the total variation based models. In this paper, we develop a faster version of the existing nonlocal PDE based speckle denoising model. We improve the existing model by using similar neighborhoods described by Mahmoudi and Sapiro in 2005. For faster convergence, we use the Split Bregman scheme to find the solution to this new model.</p>
Date	Tuesday, April 5
Time	4:10-5:00pm
Place	Pioneer 240
	Refreshments will be served at 4:00pm.