1086-65-422   **Arundhati Bagchi Misra*** (`abmisra@svsu.edu`) and **Hyeona Lim** (`hlim@math.msstate.edu`).
Nonlocal speckle denoising models based on total variation minimization. Preliminary report.

Image denoising models are available from various mathematical fields. The initial models are derived using nonlinear partial differential equations(PDEs). Filtering models based on smoothing operators have also been used for denoising. The most successful of them was the nonlocal means method proposed by Buades, Coll and Morel in 2005. Though it 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. Using nonlocal PDE operators, they proposed the nonlocal total variation method for Gaussian noise. We use this idea to develop two nonlocal PDE models for speckle noise. First we extend the speckle denoising model introduced by Krissian et al. in 2005 to the nonlocal framework. Next we develop a nonlocal PDE based accelerated diffusion speckle denoising model. For faster convergence, we use Split Bregman scheme to solve both. The new models are more accurate than the Krissian model and faster than the nonlocal means method. (Received August 31, 2012)