

As a companion paper of MA-Report 2003-07, this article continues to consider PDE-based image restoration, focusing on numerical schemes and color image denoising. The total variation minimization (TVM) and the motion by mean curvature (MMC) are carefully modified and numerically approximated for efficient and reliable image smoothing. A Crank-Nicolson alternating direction implicit time-stepping procedure is adopted to solve those differential equations efficiently and the essentially non-dissipative difference method is discussed in detail. In this article, we also introduce a hybrid algorithm, a MMC-TVM combination, to deal with the mixture of the impulse noise and Gaussian noises, for both gray-scale and color images. Numerical experiments have shown that the new hybrid algorithm works efficiently and reliably for the removal of those noises.