1003-94-1330 **Tony F Chan*** (`tonyc@college.ucla.edu`), UCLA College of Letters and Science, 2300 Murphy Hall, Box 951438, Los Angeles, CA 90095-1438, and **Jackie Shen** and **Haomin Zhou**. *Total Variation Wavelet Inpainting.*

We consider the problem of filling in missing or damaged wavelet coefficients due to lossy image transmission or communication. The task is closely related to classical inpainting problems, but also remarkably differs in that the inpainting regions are in the wavelet domain. New challenges include that the resulting inpainting regions in the pixel domain are usually not well defined, as well as that degradation is often spatially inhomogeneous. Two novel variational models are proposed to meet such challenges, which combine the total variation (TV) minimization technique with wavelet representations. The associated Euler-Lagrange equations lead to nonlinear partial differential equations (PDE's) in the wavelet domain, and proper numerical algorithms and schemes are designed to handle their computation. The proposed models can have effective and automatic control over geometric features of the inpainted images, including the sharpness and curvature information of edges. (Received October 04, 2004)