1106-J1-1653 **Thomas Höft*** (hoft@stthomas.edu), University of St. Thomas, St. Paul, MN. *Noise removal in Fourier transform profilometry.*

We present a new noise removal method for a 3-D imaging system used in industry for biometric identification. In Fourier transform profilometry, an optical system projects light with a sinusoidally-varying pattern on a 3-D surface, such as a face, and records the resulting image. The depth profile of the surface modulates the sinusoid; the phase of the inverse Fourier transform of the modulated signal's spectrum is proportional to the imaged 3-D surface. However, the spectrum of the modulated sinusoid is overlapped by other components of the spectrum, which prevents accurate reconstruction of the surface. This new method uses an otherwise discarded portion of the spectrum to estimate the obscuring spectral components and filter them out. Additionally, the method reduces additive white noise. Surfaces reconstructed using this denoising method have increased precision and suffer from fewer aberrations, enabling biometric identification with greater sucess rates. We present the method along with simulated results. (Received September 14, 2014)