1145-68-2676 **Azubuike M. Okorie**, 1200 N. DuPont Highway, Dover, DE 19901, and **Taposh Biswas**, **Samuel K. Awidi** and **Sokratis Makrogiannis***, 1200 N. DuPont Highway, Dover, DE 19901.

Feature-Based Image Registration with Applications to Remote Sensing and Medical Imaging.

Feature-based image registration techniques use mathematical models to align two images of the same scene, obtained either at different times, with different sensors, or from different viewpoints. The goal is to find point correspondences between the two images and to estimate a geometric transformation based on these points that will align the two images. The major components of feature-based registration techniques include feature detection, extraction and matching, and estimation of geometric transform. The literature in this field is rich; it includes algorithms that address either one or more of the components of feature-based registration techniques. Other published papers have combined techniques from each stage in specific application domains. In this work, we present and evaluate automated feature-based image registration methods for remote sensing and biomedical imaging. We perform systematic validation of these methods by calculating the root-mean squared error (RMSE) between ground truth (reference) transformations and transformations estimated by these methods, to evaluate the registration accuracy. Overall, our results showed that feature-based image registration methods have the potential to yield subpixel accuracy in the domains under consideration. (Received September 25, 2018)