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**Dung T. Nguyen\*** (dn5963@bard.edu), 30 Campus Road, Annandale-on Hudson, NY 12504,  
and **Mikaela Cashman, Keenan Hawekotte** and **Elizabeth Newman**. *Bar Code Localization  
in Images Using Neural Network and Linear Discriminant Analysis Frameworks*.

We develop an algorithm for the automatic localization of 1-D bar codes in images using machine learning techniques. Despite the ubiquity of operational bar code scanners, we focus on low resolution camera-based scanners and challenging environments where traditional methods fail. We develop attributes that help distinguish bar codes from other objects in the image such as text and logos. These attributes are based on the discrete wavelet transform (DWT), the discrete Fourier transform (DFT), and gradient analysis. To create a bar code detection process robust to image distortions such as rotation, glare, noise, oblique viewing angle, uneven and dim illumination, and an abundance of surrounding text, we use the information from our individual detection methods in neural network, linear discriminant analysis (LDA) frameworks, and simple boosting. We analyze the effectiveness of these attributes and report on performance for a range of degraded images. (Received September 17, 2013)