

1125-G1-2645 **Marie Snipes*** (snipesm@kenyon.edu), **Tom Asaki** (tasaki@wsu.edu), **Chris Camfield** (camfield@hendrix.edu) and **Heather Moon** (hamoon@lcmail.lcsc.edu). *Using Image Processing to Inspire Inquiry in Real Analysis Courses*. Preliminary report.

Real analysis techniques play an integral role in modern techniques for examining and manipulating data, but all too often these applications are left out of undergraduate classes on the subject. One particularly nice application is the problem of removing the noise from a corrupted image. In this talk we describe how this application has been incorporated into inquiry-based undergraduate real analysis classes. Students start by examining images in Matlab/Octave and deciding what makes an image noisy. They then use their observations to brainstorm methods for removing noise, culminating in the development of a calculus of variations technique for image denoising. Their explorations provide the motivation for understanding fundamental real analysis concepts such as metric spaces, Cauchy sequences, convergence, and derivatives. We will describe results of using this material with our classes and briefly talk about how the material can be modified for use in either a one-semester introductory analysis course or a two-semester sequence. This work is part of the NSF-funded IMAGE Math project. (Received September 20, 2016)