EKU *department of mathematics & statistics*

Colloquium

presenting...

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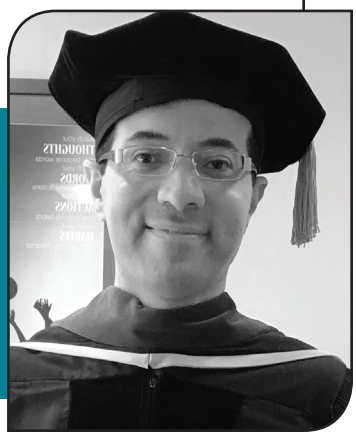
Subimage Search Using Invariant Shape Descriptors

Direct comparison of 2D images is computationally inefficient due to the need for translation, rotation, and scaling of the images to evaluate their similarity. In many biological applications, such as digital pathology and cryo-EM, often identifying specific local regions of images is of particular interest. Therefore, finding invariant descriptors that can efficiently retrieve local image patches or subimages becomes necessary. We present two-dimensional Krawtchouk descriptors that allow performing local subimage search in 2D images. The method is based on discrete orthogonal polynomials and uses only a small number of invariant descriptors per subimage. This enables querying an image and comparing similar patterns locally across a potentially large database with minimal memory usage. We show that these descriptors appear to be useful for searching local patterns or small particles in images and demonstrate some test cases.



Wednesday, November 13th, 2019

2:30 – 3:20 p.m. Wallace Bldg. Room 344