

1077-49-2477

**Casey L Richardson\*** (clr@cis.jhu.edu) and **Laurent Younes**. *A Computational Method for Measure Matching Using Metamorphosis*.

Metamorphosis is a mathematical framework for pattern matching in which one defines a distance on a space of images or shapes. In the case of images, this distance is found by computing the energetically optimal way in which one image can be morphed into the other, combining both smooth deformations and smooth changes in image intensity. In this talk, I will discuss an extension of this approach to the case of measure matching, which was proposed by Holm, Trouvé, and Younes (2009). The particular case of matching combinations of Dirac measures has applications in shape analysis using landmark points. Then I will describe on-going work (joint with Laurent Younes) on the analysis and computation of measure metamorphosis. We show that, when matching two measures, minimizers can become more singular than the measures themselves, which complicates the computation of solutions. I will discuss the nature of these singularities and present computational results for simple examples of measure matching. (Received September 22, 2011)