1146-55-497   **Yu-Min Chung** and **Austin Lawson*** (`azlawson@uncg.edu`). *Persistence curves: a new vectorization of persistence diagrams.* Preliminary report.

The push to combine TDA and machine learning has lead to recent research in vectorizing persistence diagrams.A vectorization is a function that reads in a persistence diagram and returns a real vector. A vectorization must be stable, be efficient to compute, maintain an interpretable connection to the persistence diagram and hence the underlying topological structure and must allow one to adjust the relative importance of diagram points. In this talk, we discuss persistence curves (PC), which are a class of such vectorizations. By using popular statistics of persistence diagrams (lifespan, average life, entropy, etc.) we can generate a vector using the principle idea in the Fundamental Lemma of Persistent Homology. We find that existing vectorizations, notably Persistence Landscapes and Persistent Entropy Summary, can be obtained as special cases of PC. Finally, we explore the performance of PC as feature vector inputs for machine learning algorithms to perform a texture classification task on 4 texture databases, namely Outex, UIUCTex, KTH-TIPS2, and the Flickr Material Database. (Received January 29, 2019)