1145-90-789 **Rana Haber***, rana.haber@hotmail.com, and **Anand Rangarajan** and **Adrian M. Peter**.
Functional Data Classification by Discriminative Reconstruction. Preliminary report.

Inspired by the representational aspect of functional data, we present a novel approach to time series classification. Our method combines the transformation of the data into a new space while simultaneously applying a support vector machine (SVM) classifier. SVM is one of the strongest 2-class classifiers and yet one of the simplest. The norm is to treat a functional curve as a D-dimensional vector and apply multivariate classifier to it. We propose learning a new representation of the data that allows it to leverage it's continuous properties while learning the best hyperplane that separates the two classes. Our methodology Classification by Discriminative Reconstruction (CDR) uses an appropriate bases for the data representation that is unique to each problem. We show and compare the results for two different bases, Wavelets and Radial Basis functions. Our experiments are run on all the 2-class datasets provided by the UCR Time Series Classification website. Our results show that our method CDR is as competitive or better than recent state-of-the-art methodologies. (Received September 14, 2018)