國立陽明交通大學應用數學系
學術演講公告

主講人： Prof. Yen-Hsi Tsai (The University of Texas at Austin)

講　題：Side-effects of Learning from Low Dimensional Data
　　　　Embedded in an Euclidean Space

時　間：111 年 12 月 27 日(星期二) 下午 2:00 –3:00

地　點：(光復校區) 科學一館 223 室

Abstract

　　The low dimensional manifold hypothesis posits that the data found in many applications, such as those involving natural images, lie (approximately) on low dimensional manifolds embedded in a high dimensional Euclidean space. In this setting, a typical neural network defines a function that takes a finite number of vectors in the embedding space as input. However, one often needs to consider evaluating the optimized network at points outside the training distribution. We derive estimates on the variation of the learning function, defined by a neural network, in the direction transversal to the subspace. We study the potential regularization effects associated with the network's depth and noise in the codimension of the data manifold. Finally, we discuss some implications of an embedded data manifold's curvatures for solving linear regression problems.

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