



Topic: **Loss Functions and Uncertainty Sets in Classification Problems**

Speaker: **Assoc. Prof. Takafumi Kanamori**
Nagoya University, Japan

Date: **21 March 2014, Friday**

Time: **2.00pm to 3.00pm**

Venue: **EA-06-05** (*map of NUS can be found at <http://map.nus.edu.sg/>*)

Host: **Asst. Prof. Xu Huan**

Abstract

There are two main approaches to classification problems: the loss function approach and the uncertainty set approach. The loss function approach is widely used in real-world data analysis. Statistical decision theory has been used to elucidate its properties such as statistical consistency. In the uncertainty set approach, a set expressing uncertainty of data is defined for each label from training samples. The best separating hyperplane between the two uncertainty sets is used as the decision function. Although the uncertainty set approach provides an intuitive understanding of learning algorithms, its statistical properties have not been sufficiently studied. In this talk, we show that the uncertainty set is deeply connected with the convex conjugate of a loss function. On the basis of the conjugate relation, we present that learning methods using appropriate uncertainty sets have good statistical properties such as statistical consistency. This is a joint work with Prof. A. Takeda, and Prof. T. Suzuki.

About the Speaker

Takafumi Kanamori is an Associate Professor at Nagoya University, Japan. He received his B.E. and M.E. degrees from the University of Tokyo, and Ph.D. degree from the Graduate University for Advanced Studies, Japan, in 1994, 1996 and 1999, respectively. His research interests include mathematical statistics, machine learning, information geometry, and optimization.

Admission is free. All are welcome to attend.