



統計科學研究所

INSTITUTE OF
STATISTICAL SCIENCE



S.E.M.I.N.A.R.



S.T.A.T.I.S.T.

Orientation Seminar

Title : Regression association: From concordance to
Predictability

Speaker : Dr. Jia-Han Shih (施嘉翰 博士)
(Institute of Statistical Science, Academia Sinica)

Time : 10:30 AM~12:00 PM, Monday, Jan 9, 2023

Place : Auditorium, B1F, Institute of Statistical Science

Abstract

Measures of regression association aiming at predictability of a dependent variable Y from an independent variable X have received considerable attentions recently. However, there lacks a systematic discussion of these measures, including their rationale, properties, estimation, and extensions. In this talk, we introduce a general class of rank-based regression association measures which views the regression association of Y from X as the association of two independent replications from the conditional distribution of Y given X . This general class of measures applies to both continuous and non-continuous random variables. We show that the so-called Markov product copulas can be employed as a neat and convenient building block for this general class of measures, and the measures so constructed can be expressed as a common form of the proportion of the variance of some function of Y that can be explained by X , rendering the measures a direct interpretation in terms of predictability. Also, the notion of two independent replications from the conditional distribution leads to a simple nonparametric estimation method based on the induced order statistics, together with simple asymptotic theory for continuous X and Y that are independent of each other. A real data application is presented to illustrate the utilities of the considered general framework of the regression association measures. Lastly, we discuss some possible extensions.

※ Online live streaming through Cisco Webex will be available.

※ The tea reception will be held at 10:10.