

Chilean Probability Seminar

Orador: Gonzalo Contador (UTFSM)

Título: Optimal methods for combining discrete p-values

Abstract:

Combining the significance of multiple experiments regarding the same scientific hypothesis is a crucial method for global hypothesis testing, with applications in meta-analysis, signal detection, and other data-integrative studies. Such procedures consider a group of p-values, $P_1, \dots, P_n$, to form a summary statistic to determine the overall evidence against a global null hypothesis. Mathematical studies often assume that the underlying statistics are continuous and independent, due to their homogeneous and straightforward mathematical structure. In reality, however, data and its corresponding statistics are often discrete. Discrete tests present an array of extra challenges that make the continuous framework unsuitable, and calculating the exact distribution of the summary statistic is often computationally challenging. Using tools from optimal transport, we propose an omnibus modification of a discrete statistic towards a continuous probability integral transform and show that, under mild hypothesis, the sum of discrete modifications produces an asymptotically correct test for any type I error control α in $(0,1)$. Furthermore, by expressing this transformation as a likelihood ratio, we delve into the optimal choice of combination statistic for some common discrete tests.

El enlace para conectarse al seminario es:

Unirse a la reunión Zoom

<https://reuna.zoom.us/j/84521834914?pwd=OTZ6Y0NWM3pYTGtTbEt3c0luTG96UT09>

ID de reunión: 845 2183 4914

Código de acceso: 997973

Modalidad híbrida en la sala Multimedia CMM, Beauchef 851, Torre Norte Piso 6.

Miércoles 03 de Abril a las 16:15 hrs.

