NCTS

Summer Course

Art and Practice of Regression Trees and Forests

Speaker:

Wei-Yin Loh (University of Wisconsin-Madison)

Date: 6/20, 6/27, 7/4 (Thu.) 10:00 AM - 12:00 PM

Venue：Lecture Room B, 4th Floor,
The 3rd General Building, NTHU

Regression tree and forest methods have greatly improved in the last decade. Their ease of use, prediction accuracy, execution speed, and interpretability make them essential tools for machine learning and data analysis. The course teaches how to use the tools effectively and efficiently in practice. It follows an example-focused style, with each example chosen to illustrate particular weaknesses of traditional solutions and to show how tree methods overcome them and yield new insights. Examples include a large consumer survey with hundreds of variables and substantial amounts of missing values; cancer and diabetes randomized trials with censored and longitudinal responses for precision medicine; and observational studies of high-school dropouts and Alzheimer's patients. Learning highlights are (1) how trees deal with missing values without requiring imputation, (2) how importance scores help with variable selection, and (3) how to perform post-selection inference with the bootstrap. To encourage hands-on training, the presentation is interwoven with live demos of free software. No commercial software is required. Specific algorithmic techniques are discussed where appropriate but no systematic presentation of entire algorithms is given. Attendees should have experience with linear and logistic regression. Instructions for software and dataset downloads will be given in advance.

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