

# **Hidden Structure in Data:**

## Object Data and Keys to Designing Parameter-Efficient Models

Chun-Hao Yang

Institute of Statistics and Data Science, National Taiwan University

Due to the rapid advance of technology, the diversity of data modality has been increasing. We need to consider the data's structure to design a realistic model. Such data with complicated structures are sometimes called complex data or object data. One of the main challenges in analyzing object data is the lack of vector space structures, i.e., vector operations are no longer valid. In this lecture, I will give an overview of (i) common examples of object data, (ii) general tools for object data analysis, (iii) the generalization of existing statistical methods to object data, and (iv) the role of linearization and its advantages and disadvantages.