

Michele Guindani
University of California Los Angeles, USA

Keynote Introductory Lecture
*Flexible Models for Complex Data: An Introduction to Bayesian
Nonparametric Methods*

This presentation will introduce Bayesian nonparametric (BNP) methods, underscoring their application in density estimation and clustering to effectively capture the complexity and variability prevalent in real-world data. We will focus on the characterization of distributional heterogeneity and discuss the role of hierarchical BNP models. These models offer a multi-level approach to accommodate complex data structures and diverse information sources, especially useful in contexts with nested or grouped data structures. Starting with an outline of the first principles in Bayesian nonparametric modelling, the presentation will then explore recent modelling trends. These include trait allocation models, shrinkage partition priors, and multi-view clustering, with practical applications in microbiome analysis, brain imaging data, and time series analysis.