Statistical analysis of fuzzy and imprecise data: A Bayesian approach

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Room Benvenuti
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Statistical data analysis often involves addressing multiple sources of uncertainty simultaneously. This challenge is particularly recognized in the social sciences, where social survey data are commonly used to extract insights about complex phenomena. In such cases, random (e.g., sample variation) and systematic (e.g., the subjective nature of responses) components are intricately intertwined. Fuzzy numbers offer an alternative approach to disentangle these sources of uncertainty, which often requires the adaptation of statistical techniques to accommodate fuzzy data representations. Although methods like fuzzy Expectation–Maximization (fEM) have been developed for estimation and inference, the underlying statistical modeling mechanisms are often overlooked or considered too complex to implement. This seminar will delve into recent advancements in the statistical analysis of fuzzy and imprecise data, with a particular focus on proposals that use the Bayesian approach to inference.

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