

Editorial overview: Special issue on Bayesian nonparametrics

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Bayesian nonparametrics started its journey over fifty years ago when Freedman showed that the behavior of the posterior distribution in infinite dimensional models may be rather peculiar. Soon after came the celebrated paper by Schwartz on posterior consistency which is still very relevant today. Indeed a rich theory of posterior concentration developed in the last fifteen–twenty years is deeply indebted to her theorem. Within ten years the nascent subject got a tremendous boost when Ferguson introduced the Dirichlet process. The journey continued with the introduction of new tools for prior constructions through Dirichlet process mixtures, Gaussian processes and independent increment processes. However, Bayesian nonparametric methods became truly integrated in a statistician’s toolbox only after the astonishing development of Markov chain Monte Carlo methods in the early nineties, assisted by ever increasing computing power, made virtually any Bayesian nonparametric methods computable. On the theoretical side results on posterior consistency, concentration rates, adaptation, Bernstein-von Mises theorem and coverage of credible sets developed to an unbelievable extent in the recent years, and these results continue to pour in every day, maturing the subject. At the same time discrete random objects such as partitions and clusters have led to the development of Bayesian machine learning and its integration with Bayesian nonparametrics.

To fulfill the growing need of a conference solely dedicated to Bayesian nonparametrics, the first meeting of the kind was held in Reeding, U.K., 1997. Since then the conference is being organized roughly every other year. It grew in participation and influence, and distinguished itself as a major conference in the Bayesian circle. The 10th conference on Bayesian Nonparametrics was held in North Carolina State University Campus, Raleigh, during the period June 22–26, 2015, under the banner of the International Society for Bayesian Analysis. The conferences consisted of 3 plenary lectures, 24 invited talks, about 50 contributed talks and 40 poster presentations covering all aspects of modern day Bayesian nonparametrics. Federal grants from the National Science Foundation, Army Research Office and the Office of Naval Research made it possible to support over seventy participants. Generous private donations from SAS Inc. and