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Smooth estimation of a distribution and density function on a hypercube using Bernstein polynomials for dependent random vectors. (English summary)

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Summary: “This paper considers multivariate extension of smooth estimator of the distribution and density function based on Bernstein polynomials studied in [G. J. Babu, A. J. Canty and Y. P. Chaubey, *J. Statist. Plann. Inference* **105** (2002), no. 2, 377–392; [MR1910059 \(2003d:62088\)](#)]. A multivariate version of Bernstein polynomials for approximating a bounded and continuous function is considered and adapted for smooth estimation of a distribution function concentrated on the hypercube $[0, 1]^d$, $d > 1$. The smoothness of the resulting estimator naturally lends itself in a smooth estimator of the corresponding density. The functions with other compact or non-compact support can be treated through suitable transformations. The asymptotic properties, namely, strong consistency and asymptotic normality, of the resulting estimators are investigated under α -mixing. This has been motivated by estimation of conditional densities in nonlinear dynamical systems.”

Reviewed by *Atanu Biswas*

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