A GENERALIZED CLASS OF HUMBERT-HERMITE POLYNOMIALS

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In recent years, several extensions of a class of Humberts polynomials of two variables have been established by various authors. A recent study done by Pathan and Khan that introduced Humbert-Hermite polynomials generalizes the well-known class of Humbert, Gegenbauer, Legendre, Chebyshev, and many not so named polynomials. Inspired by the research, in this paper authors defined a generalization of the class of Humbert - Hermite polynomials. Moreover, several generalizations of Hermite -Gegenbauer polynomials, Hermite Legendre, and Hermite Chebyshev polynomials are established.

A MODEL OF LOAD-SHARING SYSTEMS USING PIECEWISE LINEAR APPROXIMATION TO CUMULATIVE HAZARD

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In this study, we consider parallel load-sharing system that consists certain number of components where, the total workload redistributes among the surviving components if component fails one by one and hence loads on the remaining components increase. In this work, we describe a piecewise linear approximation (PLA) for the cumulative hazard in load-sharing systems with unknown load-share rules. This model is data-driven, and can be suitably tuned by choosing the number of linear pieces for the PLA at each stage. Maximum likelihood estimates of the model parameters are obtained. Percentile bootstrap and bootstrap methods are used to construct confidence intervals for model parameters. Monte Carlo simulations are performed to study the performance of inferential methods. The robustness of the model is also studied through detailed Monte Carlo simulations. The mean time to failure, mean residual time and reliability at a mission time of the system for the proposed model are discussed. A real data on two-component systems is thoroughly studied for illustrative purpose.