



Randomness and Uncertainty Are Central in Most Walks of Life

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The Journal of Indian Institute of Science (J IISc) inviting to edit a special issue on statistics and probability is timely as the world has recently celebrated the birth centenary of most celebrated Indian American statistician C. R. Rao (1920–)^{1–3}. I had an opportunity to work and closely interact with two of the most famous statisticians of the twentieth century C. R. Rao and British statistician David R. Cox (1924–2022)^{4, 5}. One of the commonalities among these two legends was that they saw the greater importance of both the development of theories in statistics and probability and their applications to the real world and providing leadership in science.

Applications of randomness and uncertainty can be seen in most walks of life. Building theories on these concepts have been fascinating to scientists. The insights generated by these two concepts enrich several research domains not only within statistics and probability but also in engineering and other basic sciences. The two legends mentioned above did fundamental theoretical contributions while understanding randomness and uncertainty in nature. The articles in the current special issue of *J IISc* did cover these concepts substantially.

We very much appreciate the opportunity, in this special issue, to sum up, modern developments of theory and applications of statistics and probability to the readers of *J IISc* written by brilliant researchers across the world. Several authors of the special issue have direct and long-standing academic associations with C.R. Rao and David R. Cox and other notable statisticians and probability researchers of the 20th century. I sincerely thank all the authors for accepting my invitation and for the timely submission of their articles for peer review, and for their dedication to the special issue. It was my honor to interact with all the authors over a journey of two years during the preparation of their articles for the special issue. Their careful consideration of the content and revision of the articles is very much appreciated. The referees did an excellent job. The invitation came from the Editor in Chief G.

K. Ananthasuresh to edit this special issue. The journal staff, Leelakshi and all the Springer staff involved at various stages provided dedicated services to the guest editor and all the authors. My sincere gratitude to all.

Overall, the special issue on probability and statistics of *J IISc* has come satisfactorily with rich and accessible content. We hope the students, and faculty across various universities and Institutes in India would enrich their knowledge of the subject and enjoy the content presented in the special issue.

With best wishes,
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Guest Editor

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India. Dr. Rao's models assisted in the national AIDS control planning in India. He served on various committees and consultant on mathematical modeling, public health, and artificial intelligence (AI). He developed the first AI-based approach in the world for COVID-19 identification through mobile-based Apps that inspired several such Apps in the world. He taught courses such as real analysis, complex analysis, differential equations, mathematical biology, demography, and stochastic processes. Rao's other noted contributions include his Partition Theorem in Populations, multilevel contours in complex bundles, fundamental theorem in stationary population models (Rao-Carey Theorem), and blockchain technology in healthcare.