

Expository Writing Award Citation for 2009

The Committee for the Expository Writing Award is pleased to name Dimitri P. Bertsekas as the 2009 recipient. Professor Bertsekas is a prolific author, renowned for his books on topics spanning dynamic programming and stochastic control, convex analysis, parallel computation, data networks, and linear and nonlinear programming. These books are supported by an extensive record of journal publications which have made numerous seminal contributions. He communicates difficult mathematical concepts with unusual clarity, thereby reaching a broad audience across many disciplines.

His writing is perhaps best exemplified by his books on dynamic programming and stochastic control. His most recent contribution, *Dynamic Programming and Optimal Control*, offers an elegant and thorough treatment of the concepts of stochastic control with the clarity of an introductory text, while providing students with the foundation to understand optimization over time in a range of applications. This book includes an extensive chapter on approximate dynamic programming, that builds on his earlier work, *Neuro-Dynamic Programming* (with John Tsitsiklis). This earlier work was the first book to bridge the literature on stochastic approximation and dynamic programming, thus integrating the rapidly growing field of reinforcement learning with Markov decision processes in a rigorous and accessible way.

A significant dimension of Professor Bertsekas' writing is his ability to bridge the multiple disciplines spanned by his books. His contributions to distributed computation led to the concepts of synchronous and asynchronous algorithms for Markov decision processes. He has contributed insights into the properties of approximate dynamic programming algorithms over restricted spaces by drawing on his deep understanding of linear algebra developed in his work on mathematical programming and convex analysis. These contributions exemplify a style of "scholarship through writing" that enables a deep exploration and unification of new fields of research which has become a hallmark of Professor Bertsekas' distinguished career.

Professor Bertsekas' writing communicates rigorous mathematics in a clear, accessible style, as evidenced by an extraordinary 30,000 citations to date. This style, which he has shared in his presentation "Ten simple rules for mathematical writing," available online at his M.I.T. website, emphasizes clarity with precision. This makes his books useful as both introductory texts as well as advanced research references. It is for this reason that the Expository Writing Committee (Nicholas G. Hall, Garrett J. van Ryzin and Warren B. Powell) is pleased to name Dimitri P. Bertsekas as the recipient of the 2009 INFORMS Expository Writing Award.