Stanford

Donald Iglehart

Professor of Engineering-Economic Systems & Operations Research, Emeritus

Management Science and Engineering

Bio

BIO

Donald L. Iglehart is a John von Neumann Theory Prize recipient who has made fundamental contributions to performance analysis, optimization, and simulation of stochastic systems. Iglehart received his Bachelor's degree in Engineering Physics from Cornell in 1956, his Master's degree in Mathematical Statistics from Stanford University in 1959, and his PhD in the same subject from Stanford in 1961. His dissertation was supervised by Herbert E. Scarf and Samuel Karlin, and the topic was on dynamic programming and stationary analysis of inventory problems. He taught at Cornell University from 1961 to 1967 and came to Stanford in 1967, where he has been emeritus since 1999. In1976, he spent a very productive year as an Overseas Fellow at Churchill College at Cambridge University. In his capacity as a PhD advisor, he has had many notable students, including Peter Glynn, Peter Haas, Phil Heidelberger, Doug Kennedy, and Ward Whitt.

Iglehart was jointly awarded the John von Neumann Theory Prize in 2002 with Cyrus Derman, the same year he was named an inaugural Fellow of the Institute for Operations Research and the Management Sciences. He was recognized for having pioneered and developed diffusion limits and approximations for heavily congested stochastic systems. His ideas provided tractable limiting processes and readily computable approximations for complex queueing and other stochastic systems for which closed-form solutions have proved intractable. Iglehart's original research and contributions have heavily influenced queueing theory in the years since their publication, and his papers have been cited in hundreds of publications. Some of his other work has focused on inventory and distribution problems.

Iglehart was also honored by the INFORMS Simulation Society in 2012 with its highest honor, the Lifetime Professional Achievement Award (LPAA). His foundational work in that field recognized and exploited the underlying stochastic structure of simulation as a means of producing enhanced simulation methodologies. For example, he introduced and led the development of the regenerative method for stochastic simulation output analysis, inspiring a flood of significant contributions to simulation methodology. In the late 1980s, Iglehart and Glynn incorporated such techniques as importance sampling into stochastic simulations. The LPAA also noted his ability to clearly organize and articulate deep theory in his presentations and writing, and recognized his education of Ph.D. students who have had, individually and cumulatively, a profound impact on simulation education and research. The citation for his award states that "It is no exaggeration to say that Don Iglehart's contributions made simulation a respectable research discipline in some circles of the operations research community."

In addition to being an INFORMS Fellow, Iglehart was elected in 1999 to the National Academy of Engineering, having been selected for his contributions to queueing theory, simulation methodology, inventory control, and diffusion approximations. He was also honored in 1971 through his induction as a Fellow of the Institute of Mathematical Statistics.

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Historical Academic Appointments:

1961-67 School of Operations Research and Industrial Engineering, Cornell University

1967-96 Department of Operations Research, Stanford University

1996-99 Department of Engineering-Economic Systems and Operations Research, Stanford University

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Management Science and Engineering

ADMINISTRATIVE APPOINTMENTS

- Chair, Department of Operations Research, (1983-1988)

HONORS AND AWARDS

- Lifetime Professional Achievement Award, INFORMS Simulation Society (2012)
- John von Neumann Theory Prize, Institute for Operations Research and the Management Sciences (INFORMS) (2002)
- Fellow, Institute for Operations Research and the Management Sciences (INFORMS) (2002)
- Member, National Academy of Engineering (1999)
- Fellow, Institute of Mathematical Statistics (1971)

Publications

PUBLICATIONS

- **SIMULATION OUTPUT ANALYSIS USING STANDARDIZED TIME-SERIES** *MATHEMATICS OF OPERATIONS RESEARCH*
  Glynn, P. W., Iglehart, D. L.
  1990; 15 (1): 1-16
- **IMPORTANCE SAMPLING FOR STOCHASTIC SIMULATIONS** *MANAGEMENT SCIENCE*
  Glynn, P. W., Iglehart, D. L.
  1989; 35 (11): 1367-1392
- **SIMULATION METHODS FOR QUEUES: AN OVERVIEW** *QUEUEING SYSTEMS*
  Glynn, P. W., Iglehart, D. L.
  1988; 3 (3): 221-255
- **REGENERATIVE SIMULATION OF RESPONSE-TIMES IN NETWORKS OF QUEUES** *JOURNAL OF THE ACM*
  Iglehart, D. L., SHEDLER, G. S.
  1978; 25 (3): 449-460
- **SIMULATING STABLE STOCHASTIC SYSTEMS .5. COMPARISON OF RATIO ESTIMATORS** *NAVAL RESEARCH LOGISTICS*
  Iglehart, D. L.
  1975; 22 (3): 553-565
- **EXTREME VALUES IN THE GI/G/1 QUEUE** *THE ANNALS OF MATHEMATICAL STATISTICS*
  Iglehart, D. L.
  1972; 43 (1): 627-635
- **MULTIPLE CHANNEL QUEUES IN HEAVY TRAFFIC. I.** *ADVANCES IN APPLIED PROBABILITY*
  Iglehart, D. L., Whitt, W.
  1970; 2 (1): 150-177
- **LIMITING DIFFUSION APPROXIMATIONS FOR MANY SERVER QUEUE AND REPAIRMAN PROBLEM**
  INGLEHAR.DL,,
  INST MATHEMATICAL STATISTICS.1965: 364-&

- **THE DYNAMIC INVENTORY PROBLEM WITH UNKNOWN DEMAND DISTRIBUTION** *MANAGEMENT SCIENCE*
  IGLEHART, D. L.
  1964; 10 (3): 429-440
- **OPTIMALITY OF (S, S) POLICIES IN THE INFINITE HORIZON DYNAMIC INVENTORY PROBLEM** *MANAGEMENT SCIENCE*
  IGLEHART, D. L.
  1963; 9 (2): 259-267