

Book reviews

Causality: Models, Reasoning, and Inference

Judea Pearl

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This book is a very good exposition to the understanding of causality, in a solid and extensive manner. It begins with an introduction to probability theory and Bayesian networks, then it builds models to identify, explain and weigh the cause and effect relationship. The flow of the chapters leads the reader through important concepts of inference, structural models, Simpson's paradox, and confounding. The emphasis on logical structure of counterfactuals provides a unifying effect for different fields of interest, such as social science, econometrics, decision science, artificial intelligence, engineering, managerial science, statistics, biostatistics, and medical science. But it offers much more, builds a frame of reference for the design of experiments to acquire information about probable causes of the effects and does it so very effectively, where this undertaking has been a subject of many debates since the publication of *A Problem in the Doctrine of Chances*, by T. Bayes and later approached with great success by R.A. Fisher in *The Design of Experiments*, and the author gives very eloquent account of all these relevant works. The emphasis of this book is on the ideas, and didactically that combines the generality with the individual methods. As a result of these efforts, despite the inevitable mathematical symbolism utilized in

the book that requires preliminary exposure to the language, it is a pleasant and thoroughly understandable text.

This can be a text to study for its own sake; one can learn a substantial amount of background material for applying into a particular field of interest. On the other hand, readers expecting to utilize it as a “manual” book for individual practice should be warned that it does not have a standard text book format, no exercises are given to the reader, nor does it serve a high-level research interest. However this book provides a very good treatment of the causality, and it will give pleasure to its reader to learn this subject matter at an advanced undergraduate level: I highly recommend this book.

References

- Bayes, T. (1958) An essay towards solving a problem in the doctrine of chances. *Biometrika*, **45**, 293–315.
- Fisher, R.A. (1935) *The Design of Experiments*, Oliver and Boyd.

*Reviewed by Kemal Gursoy, Long Island University,
Brooklyn, New York, USA
E-mail: gursoy@rci.rutgers.edu*