

Info-Gaps Methods for Decision Support

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Abstract

The following questions underlie this lecture:

- How can severe uncertainty in knowledge and understanding be modelled and managed?
- Why is satisficing a strategically advantageous design strategy under severe uncertainty?
- What is the relation between min-max and robust-satisficing strategies for design?

In this talk we discuss theorems asserting that, under severe uncertainty, a robust-satisficing decision has a better probability of survival than a best-model outcome-optimizing decision. These theorems are based on non-probabilistic info-gap decision theory, which provides a quantification of Knightian uncertainty. We discuss applications of info-gap decision theory to a generic design problem, and to conservation planning. We touch on monitoring to detect invasive species, and investment for bio-diversity.

References

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- Helen M. Regan, Yakov Ben-Haim, Bill Langford, Will G. Wilson, Per Lundberg, Sandy J. Andelman, Mark A. Burgman, 2005, Robust decision making under severe uncertainty for conservation management, *Ecological Applications*, vol.15(4): 1471–1477.
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More references, links to international workshops on info-gap theory, and other sources, can be found on my website: <http://www.technion.ac.il/yakov>