Info-gap Reliability of Dynamic Systems

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Good performance is better than poor performance, but the need for reliability must temper the aspiration for high performance. To achieve this balance we must model and manage our severely deficient information about, and understanding of, the processes we confront.

The central idea in this talk is that:

Performance-optimality
must be **traded-off** against
robustness to info-gaps.

We discuss two simple examples. The first is the design of a cantilever subject to uncertain loads. The second is a dynamic search and evasion problem. The examples illustrate the irrevocable trade-off between high performance and high immunity to uncertainty.

Throughout the talk we will emphasize the conceptual tools from

Information-gap decision theory

which help the designer in deciding what to optimize and how to do it.

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