Robust-Satisficing in Engineering Design

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Abstract

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Hammurabi's Code of Law imposed extreme penalties for design failures, providing strong incentives for ancient engineers to meet design specs. Engineers today still bear legal liability for design failure, though less severely than in ancient Babylonia. Why does the engineering profession commonly specify performance requirements as inequality constraints, rather than specifying constrained-optimal design? To "satisfice" means to "meet expectations or specifications". Why do engineers satisfice rather than optimize performance requirements? The answer we present is based on design in the face of severe uncertainty. We use info-gap decision theory to formulate a design strategy: robust-satisficing. We discuss the relation between robust-satisficing and min-maxing, and we discuss a simple example.

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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

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