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How to Make a Decision under Interval Uncertainty If We Do Not Know the Utility Function

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Abstract. Decision theory describes how to make decisions, in particular, how to make decisions under interval uncertainty. However, this theory's recommendations assume that we know the utility function – that describes the decision maker's preferences.
Sometimes, we can make a recommendation even when we do not know the utility function. In this paper, we provide a complete description of all such cases.

Vladik Kreinovich received his MS in Mathematics and Computer Science from St. Petersburg University, Russia, in 1974, and PhD from the Institute of Mathematics, Soviet Academy of Sciences, Novosibirsk, in 1979. From 1975 to 1980, he worked with the Soviet Academy of Sciences; during this time, he worked with the Special Astrophysical Observatory (focusing on the representation and processing of uncertainty in radioastronomy). For most of the 1980s, he worked on error estimation and intelligent information processing for the National Institute for Electrical Measuring Instruments, Russia. In 1989, he was a visiting scholar at Stanford University.

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