

Pragmatic Bayes: Towards Extracting Insight, if not Numbers, From Models which neither V nor V

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Abstract

Inasmuch as the dynamics of every digital computer model differs significantly from those of its target system, Teller's (2001) Perfect Model Model should be a nonstarter for digital simulation. Nevertheless that idea plays a central role in V&V, and is arguably a requirement for rational paths along the Bayesian Way. Models might still prove useful if they can shadow the observed behaviours of the target system in some way, and (limited) encouragement might be drawn when forecasts from "independent" models are equivalent-in-distribution. Many, if not most large operational nonlinear simulation models will never pass basic V&V standards. When might one consider their probabilistic forecasts in decision making rationally? This question is considered from a Bayesian perspective and illustrated in a concrete case of parameter selection (not to be confused with "parameter estimation").

A Pragmatic Bayes compromise is discussed; it offers significantly less than current probabilistic weather forecasts and "Bayesian" climate projections claim to provide. Nevertheless, it seems we do gain some insight from these models. How might such insight be identified and used rationally in decision making? How does decision support differ between weather-like tasks and climate-like tasks?