

Unite and conquer: Overcoming decision paralysis and confusion in the face of a cloud of methods, models and metrics

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Abstract Research output is increasing at an ever-increasing pace. At the same time, there is a growing recognition of the need for this research by industry, who struggle to deal with mounting complexity and uncertainty. However, often, research outputs add to this complexity and uncertainty, rather than help alleviate it. This is partly due to the significant increase in the volume and availability of research outputs, but also because of the propensity of researchers to name, brand and market the methods, models and metrics they publish, without sufficient connection to each other and existing work. This makes it difficult for industry, and other researchers, to know which methods, models and metrics are most appropriate, as they are often viewed as competing, stand-alone alternatives. However, in many cases, these branded methods, models and metrics are strongly related to each other, as well as to those proposed previously (often many decades prior). Consequently, there is a need to articulate these connections and relationships to assist with overcoming the decision paralysis and confusion stemming from the naming, branding and marketing of methods, models and metrics, which fosters the illusion that users have to choose from one of a large number of competing paradigms, rather than from variations on a theme. This talk will present a number of examples of unifying frameworks in the areas of robustness analysis, uncertainty and sensitivity analysis, machine learning, optimisation and water resources management that highlight that many named methods, models and metrics are complementary, rather than competing paradigms. It will also challenge the research community to move away from the practice of naming, branding and marketing their “new” methods, models and metrics, and to clearly articulate the relationship with other, often historical approaches. Unfortunately, this is not encouraged by the metrics that are used increasingly to measure research performance, as they reward practices that favour competition, rather than collaboration, and encourage referencing research from recent years.

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