

What are imprecise probability theories good for ?

Theoretically, I know (at least partially)

- They have a unifying power
 - Robust vs stochastic optimization
 - Decision under risk vs uncertainty
 - Three-valued logic vs probabilistic logic
 - Etc...
- They challenge classical thinking
- They see indecision and imprecision due to lack of information as a first principle, as opposed to classical axiomatic of probabilities or decision under ambiguity

Practically, it is still unclear to me, but I'm searching

Currently, trade-off between added complexity and practical gain clearly not good and/or not convincing. 3 solutions:

1. Build **tools (algorithms, ...)** with efficiency close to probabilistic ones (Partially done). Necessary but not sufficient.
2. If a crisp decision is sought, **show problems for which the trade-off is clearly in favour of IP** methods → need tools to compare the approaches and/or success story of real applications.
3. Indecision valuable as intermediary information, but seldom satisfactory as a final result → **Need to define what to do once you know you cannot decide** → some tools exist (adding risk-attitude to the DM), others are still largely unexplored within IP (what information should we seek to reduce indecision/imprecision?)