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Testing conditional independence to determine shared information in a data/signal fusion process

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Highlights

- In this paper, we discuss a statistical approach to determine shared information between data or signals in order to merge these data/signals for decision making.
- The shared information is expressed as a conditional independence testing.
- The HT is defined as a linear combination of entropies of random variables subsets.
- Entropy and cross entropy estimates are detailed in particular the bias that is needed for a robust HT design for small data sets.
- Simulations allow the comparison between real and theoretical results, in particular the accordance of the empirical and theoretical index pdfs under the null hypothesis, for a robust decision making in practical cases.

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