Silence is Golden in Grid too

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In this work we formulate the inference disclosure problem in terms of mutual information and present a heuristic algorithm to solve it. We propose an entropy-based algorithm to bound information leakage about a variable $Y$ when releasing information $X^{\sim}$ about another variable $X$ (dependent with $Y$). A step-wise decomposition of the joint distribution matrix of $(X; Y)$ is described that allows progressive control over mutual information between $X^{\sim}$ and each of $X$ and $Y$, by letting $X^{\sim}$ be an accurate rendition of $X$ in (as large as possible) an event, and providing probabilistic partial information about $X$ in its complement. These inference disclosure issues, of interest in the information sharing era we experience, are analyzed in the context of several related problems and illustrated on bi-variate Gaussian and other examples.

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