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CORRECTION

Correction to: Predictive Rate-Distortion for Infinite-Order Markov Processes

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We uncovered an error in Ref. [1] that claims the predictive rate-distortion function separates achievable from unachievable sensors. This relies on the standard rate-distortion theorem, but the latter does not apply.

Reference [2] invokes a slightly different setup—one closer to that used by Shannon himself. There, an information source is coded, sent to a channel, and decoded to uncover the original source. (To map from this to Ref. [1], simply coarse-grain the first code and channel into a single code.) Reference [2] shows that an optimal communication system—in which the code is well-matched to the channel or equivalently (Lemma 2)—can only be optimal if the distortion measure satisfies a particular constraint that corresponds, in essence, to the information bottleneck (Lemma 4*i*).

As such, Ref. [1] overstated the generality of the result in question. It is still true that the proposed predictive rate-distortion objective—which is very general in terms of allowed distortion measures—can often be reformulated in terms of forward-time and reverse-time causal states. However, the objective itself corresponds to an optimal communication system only when the distortion measure is the conditional entropy. And, this setup corresponds to the predictive information bottleneck.

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