

Rate-distortion theory: did we get it all wrong?

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ABSTRACT

In this talk we revisit some basic definitions in rate-distortion theory, and argue that they fail to capture the full operational trade-offs of compression. Specifically, we argue that the concept of expected distortion, which strikes a balance between the reconstruction quality given different source values is not suitable in many scenarios. We also consider the excess-distortion probability, and find that it unnecessarily couples the quantizer dimension with user experience. For both issues, we offer some remedy in the form of new information-theoretic functions.

Based on joint work with Uri Erez and Gregory W. Wornell.