Review-7

On Variational Bounds of Mutual Information

A number of machine learning problems make use of Mutual Information (MI) as a metric for estimating the relationship between variables. However, bounding MI is a challenging task. Variational bounds allow tractabe objectives which are scalable to high dimensional tasks. The work presents a unified framework for variational bounds which consists of existing lower and upper bounds on MI. The bounds exhibit high bias or variance when MI is large. To that end, the framework is improved by providing a continuum on lower bounds which trades off bias and variance. Suitability of bounds is assessed on high dimensional control problems and representation learning.