Bivariate Extension of Discrete Cumulative Residual Entropy

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Abstract. Recently, a new measure of uncertainty for continuous distribution has been introduced by Rao et al. (2004) which is called Cumulative residual entropy (CRE) and the discrete version of CRE has been defined by Baratpour and Bami (2012). The present paper addresses the question of extending the definition of CRE to bivariate setup in discrete case and study its properties. We show that the proposed measure is invariance under increasing one-to-one transformation and has additive property. Finally, the bivariate version of the hazard rate, mean residual life and cumulative residual entropy are obtained for bivariate geometric distribution.

Keywords. Distribution Entropy, Cumulative residual entropy, Bivariate hazard rate, Bivariate mean residual life, Bivariate cumulative residual life, Bivariate geometric distribution.