MML Estimation of the von Mises Concentration Parameter

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Abstract

We apply the information-theoretic Minimum Message Length (MML) principle to the problem of estimating the concentration parameter, κ, of the von Mises distribution. We restrict ourselves here to the circular case, $d = 2$. Using various measures of estimator performance (such as mean squared error, etc.), we find that both the MML estimator derived here and the marginal maximum likelihood estimator of Schou (1978) reliably outperform Maximum Likelihood (ML) in estimating the parameter values used to generate simulated data. We further find that the MML estimator compares favourably to Schou's estimator, particularly for small sample sizes.