MULTIVARIATE DATA MIXTURE MODEL ESTIMATION DEVICE, MIXTURE MODEL ESTIMATION METHOD, AND MIXTURE MODEL ESTIMATION PROGRAM

Abstract

With respect to the model selection issue of a mixture model, the present invention performs high-speed model selection under an appropriate standard regarding the number of model candidates which exponentially increases as the number and the types to be mixed increase. A mixture model estimation device comprises: a data input unit to which data of a mixture model to be estimated, candidate values of the number of mixtures which are required for estimating the mixture model of the data, and types of components configuring the mixture model and parameters thereof, are input; a processing unit which sets the number of mixtures from the candidate values, calculates, with respect to the set number of mixtures, a variation probability of a hidden variable for a random variable which becomes a target for mixture model estimation of the data, and estimates the optimal mixture model by optimizing the types of the components and the parameters therefor using the calculated variation probability of the hidden variable so that the lower bound of the posterior probabilities of the model separated for each component of the mixture model can be maximized; and a model estimation result output unit which outputs the model estimation result obtained by the processing unit.

Figure 1