Learning a Bayesian network model for predicting wildfire behavior

A Bayesian network (BN) model for predicting wildfire spreading was developed. From the available indicator variables related to weather, topography and land cover, the most informative were selected with the help of automatic structure learning algorithms. A final BN model was then constructed from these indicators using phenomenological reasoning. Automatic structure learning of the complete model was found to have severe limitations due to large number of variables in combination with limited number of observations. The BN model was learned and validated with data from the Mediterranean island of Cyprus. The final BN was compared to a Naïve Bayesian Classifier (NBC), which serves as a benchmark, and it was shown to be applicable for prediction purposes.
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