
Semi-supervised Multi-view Gaussian Processes for Microbial Growth Prediction

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We propose semi-supervised multi-view Gaussian process (GP) model for microbial growth prediction. Our semi-supervised GP model is formulated using co-regularization approach, namely we construct GPs for different views, such that the training error of each hypothesis on the labeled data is small and, at the same time, the hypotheses give similar predictions for the unlabeled data. Our model is naturally suitable for taking into account multiple data representations and learning complex non-linear interactions. We apply proposed model for describing and predicting growth, succession, and proliferation of microbial species in the spoilage process. In our empirical evaluation on the recently collected biological dataset the proposed approach notably outperforms several regression techniques and leads to better understanding of the role of various bacterial species and their influence on spoilage process.