ECS 132 Final Project

Aaron Okano, Anatoly Torchinsky, Justin Maple, Samuel Huang

November 19, 2012

1 Forest Fire

In [Cortez and Morais, 2007], the output 'area' was first transformed with a ln(x+1) function. Then, several Data Mining methods were applied. After fitting the models, the outputs were post-processed with the inverse of the ln(x+1) transform. Four different input setups were used. The experiments were conducted using a 10-fold (cross-validation) x 30 runs. Two regression metrics were measured: MAD and RMSE. A Gaussian support vector machine (SVM) fed with only 4 direct weather conditions (temp, RH, wind and rain) obtained the best MAD value: 12.71 +- 0.01 (mean and confidence interval within 95best RMSE was attained by the naive mean predictor. An analysis to the regression error curve (REC) shows that the SVM model predicts more examples within a lower admitted error. In effect, the SVM model predicts better small fires, which are the majority. Our goal with this data is to predict the fire size.

2 Parkinson's disease

The dataset was created by Max Little of the University of Oxford, in collaboration with the National Centre for Voice and Speech, Denver, Colorado, who recorded the speech signals. The original study published the feature extraction methods for general voice disorders.

This dataset is composed of a range of biomedical voice measurements from 31 people, 23 with Parkinson's disease (PD). Each column in the table is a particular voice measure, and each row corresponds one of 195 voice recording from these individuals ("name" column). The main aim of the data is to discriminate healthy people from those with PD, according to "status" column which is set to 0 for healthy and 1 for PD.

The data is in ASCII CSV format. The rows of the CSV file contain an instance corresponding to one voice recording. There are around six recordings per patient, the name of the patient is identified in the first column.For further information or to pass on comments, please contact Max Little (littlem '@' robots.ox.ac.uk).

Our goal with this data is to try to monitor patients with Parkinson's disease remotely, by simply analyzing their voices on the phone.

3 Beyond ECS 132

Probability and statistics are not just applicable to this class, but also to other fields of CS. Here are/is research papers written by some members of our CS faculty, in which they make use of probability or statistics.