

Garbled Notes

Things I left Hanging Around

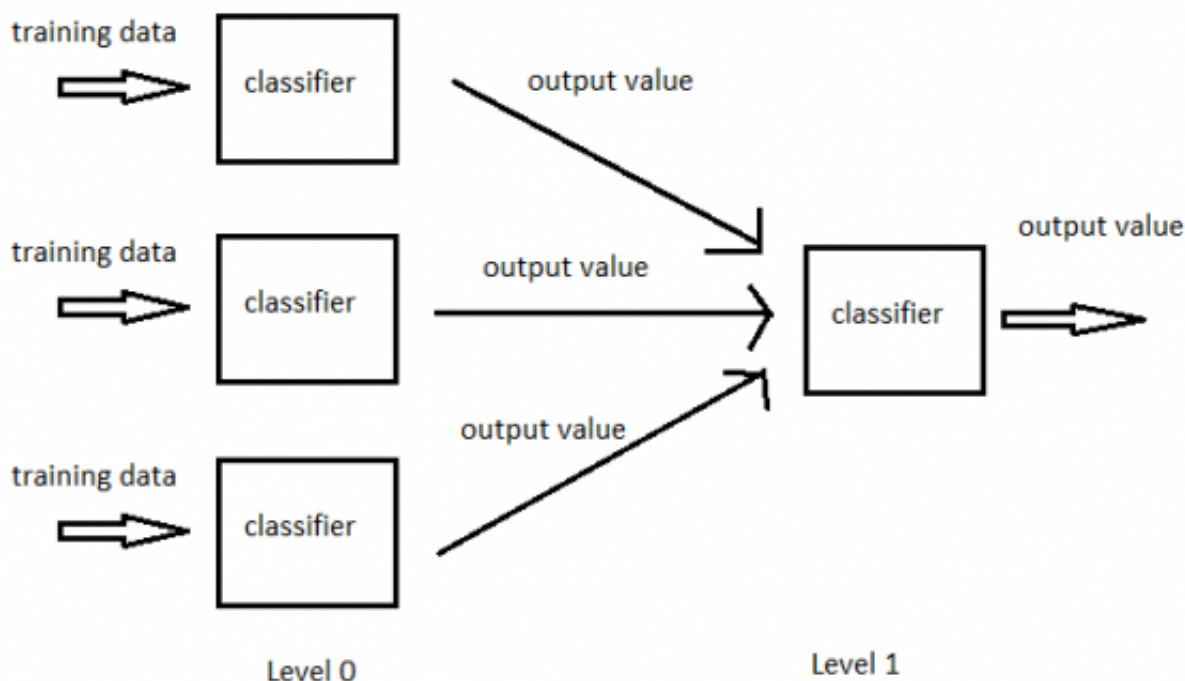
Stacking, Blending and Stacked Generalization

Stacking, Blending and Stacked Generalization are all the same thing with different names. It is a kind of ensemble learning.

In traditional ensemble learning, we have multiple classifiers trying to fit to a training set to approximate the target function. Since each classifier will have its own output, we will need to find a combining mechanism to combine the results. This can be through voting (majority wins), weighted voting (some classifier has more authority than the others), averaging the results, etc. This is the traditional way of ensemble learning.

In stacking, the combining mechanism is that the output of the classifiers (Level 0 classifiers) will be used as training data for another classifier (Level 1 classifier) to approximate the same target function. Basically, you let the Level 1 classifier to figure out the combining mechanism.

Concept Diagram of Stacking



In practice, this works very well. In fact, [it is most famously used in Netflix](http://www.chioka.in/stacking-blending-and-stacked-generalization/) to achieve a very good

score.

I have tested this technique on the Vertebral dataset with results below:

*Random Forest with 1000 trees, **accuracy = 0.883116883117.***

*Random Forest (10 trees), Extra Trees (20 trees), and a Gradient Boosting Tree (10 trees) stacked with a Logistic Regression, **accuracy = 0.935483870968***

You may find the code and dataset that demonstrates stacking here.

This entry was posted in Machine Learning and tagged Blending, Stacked Generalization, Stacking on September 5, 2013 [<http://www.chioka.in/stacking-blending-and-stacked-generalization/>] .

4 thoughts on “Stacking, Blending and Stacked Generalization”



jiffies

June 5, 2015 at 23:32

Hi,I read your code on github, but can't figure it out.On my dataset(kdd cup 2015),it score worse than single model.I also run your code,and it print accuracy is 0.822 ,not 0.935 in the comment.Could you help me ?



jebreen

August 6, 2015 at 22:58

dear Professor ,
is there is code with R language?

Pingback: [Kaggle Ensembling Guide | MLWave](#)

Pingback: [KAGGLE ENSEMBLING GUIDE | Notes for Computer Science](#)