**User Manual**

**The LOGO Algorithm**

1. (1) The algorithm is very simple. It can be coded literally in 100 lines using Matlab. Therefore, I suggest you develop your own version of the algorithm. In this way, you can have a deep understanding of how this algorithm works.
2. (2) Try TestMe.m first to see if the code works in your computer. You can input an arbitrary number of irrelevant features into the spiral data. If your computer has a large RAM and you are patient, you can even add one million features to see how it works.
3. (3) When applying the algorithm to your datasets, please monitor the learning progress curve. If the algorithm does not converge, use a larger kernel width (please refer to the paper for details). Please do not compare a divergent result with those generated by other algorithms, since the comparison is not fair.
4. (4) The logo algorithm can also be used for classification (i.e., perform feature selection and classification *simultaneously*). This is a very nice feature offered by the algorithm. Please see the file fold named Classification and the paper (Eq. 8) for details.
5. (5) The algorithm does not make any assumption on data distribution. It can be applied to data with arbitrary complexity. The only thing you need to do is to tune the kernel width. If the kernel width is small, it can be used on non-linear data; if the kernel width is large, it can be used on linear data. In fact, if the kernel width is set to infinite, the algorithm performs similarly to L-1 regularized logistics regression. Please refer to the paper for detailed discussion.
6. (6) There are two parameters: the kernel width and regularization parameter. Although the performance of the algorithm is not sensitive to the values of the two parameters as shown in the paper, I suggest you estimate the parameters through cross-validation using the classification function (see item 4) in order to optimize its performance. This is another nice feature of the algorithm: it is difficult to estimate parameters in many existing algorithms.
7. (7) If you have any question and comments, please feel free to send me emails: [sunyijun@biotech.ufl.edu](mailto:sunyijun@biotech.ufl.edu).
8. (8) More information can be found at <http://plaza.ufl.edu/sunyijun/PAMI2.htm>.
9. (9) Citation: Y. Sun, S. Todorovic, and S. Goodison, [Local Learning Based Feature Selection for High Dimensional Data Analysis](http://plaza.ufl.edu/sunyijun/PAMI2.htm), *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 32, no. 9, pp. 1610-1626, 2010.
10. (10) Finally, have fun and let me know how it works for your problems.