

Week Starting 5th September

This week I've mainly been working on the Anomaly Detection filters to be used with Gabriel's gait signature generation. I've finished work on the filter code, but a little work needs to be done on fine-tuning constants used. The recommended parameters given by the paper that introduces the model will always result in a division by zero, regardless of the input, so a little experimentation will be needed to re-produce the same standard of results as published in the paper.

Since the gait signature generator has not yet been written, I've written a signature generator filter based on the same data set as used in many machine-learning style papers, the Wisconsin Breast Cancer data. This is also the data set used in the Dendritic Model paper, and so it makes it easier to compare results. The data set can be downloaded from;

UCI Knowledge Discovery in Database Archive;
<http://kdd.ics.uci.edu>

The data set is far more sanitised than I was expecting. Each item consists of 9 integer attributes between 1 and 10, and a classification label indicating if the cell is malignant or benign. It will be hard to tell, before we can collect gait signatures, how well this model will cope with the data, and if the simplistic measurements taken will expose enough variation between normal and anomalous signatures to be detected.

I also read the paper you sent me entitled "Malicious Code Execution Detection and Response Immune System inspired by the Danger Theory", which uses the same dendritic model that I've been implementing in the past week. The paper adds to the previous papers in describing a more complete view of the immune system, including a response mechanism based on T-cells. This is for the protection and removal of a detected malicious code threat, but doesn't add to the anomaly detection capability of the population of Dendritic Cells.

As of tomorrow I'll start working through the Handel C tutorial, and will continue improving the anomaly detector. I've also arranged to meet Gabriel and Matti to discuss the filter that I've been working on and their signature generator in the week. Is there a specific application I should have in mind whilst I look at Handel C?

Many thanks,
Steven