

## NegSelReport

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Two-letter code for your chosen negative selection algorithm: VD

During my research on parameter optimization for variable radius detectors, I found that the limit on the number of detectors is rarely reached. Instead, the key parameters for increasing detection rate were  $c_0$  and  $c_1$ . I observed that as the values of  $c_0$  and  $c_1$  approached 1, the detection rate improved, but the time required to build the detectors increased. To balance the need for efficient build and test times with optimal detection rate, I settled on a value of 0.9995 for both  $c_0$  and  $c_1$ .

Additionally, I found that the self-radius parameter played a crucial role in the algorithm's performance. Setting the self-radius too close to 0 resulted in an excessive number of detectors, causing the algorithm to prematurely terminate. This also led to an increase in false alarms. After careful experimentation, I determined that a self-radius of 0.009 provided the best balance between maximizing detection rate and minimizing false alarms.

In conclusion, I discovered that values of  $c_0$  and  $c_1$  closer to 1 increase the detection rate, but also increase the build time. On the other hand, values moving closer to 0 from 1 decrease the detection rate due to the build being terminated before a sufficient amount of detectors can be created. And the self-radius parameter also plays a crucial role in balancing the detection rate and false alarms.