In previous work, we have found the best kernels size for defect identification to be 7x7 with an overall accuracy of 63%. However, there were some problems with this model. It is not very effective in identifying holes. The Recall(sub)holes was close to 41%, which make is not very effective. However, we noticed that the Recall(sub)holes was 68% for a 3x3 kernels models, even though the overall accuracy for that model was 58%. Since hole defects tend to be smaller, this results strong suggests that using a multi-size kernel model may yield better results. This page describes this work.

Top line summary:

We shall assume that there is a business need for Tilda to lift the Recall of every defect class to above 50% while maintaining the overall accuracy to ≥60%.

The best model we found was one with 10 3x3 kernels and 16 7x7 kernels at the first layers. It achieved an overall accuracy of ??%. The Recall values were most balanced, with an average of ?? and a standard deviation of ??.

3x3 8 7x7 16 has a very much better overall accuracy. The Recall values have all been greatly improved over the single kernel size model. In particular, it is very good at identifying objects 81%. However, there is a large variance in the Recall values (???) , partly because the Recallhole is not lifted very high 5?%.

We have done a “grid search”

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Description automatically generated

A diagram of a number of objects

Description automatically generated