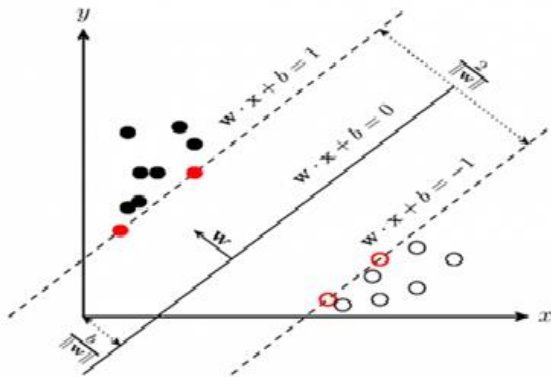


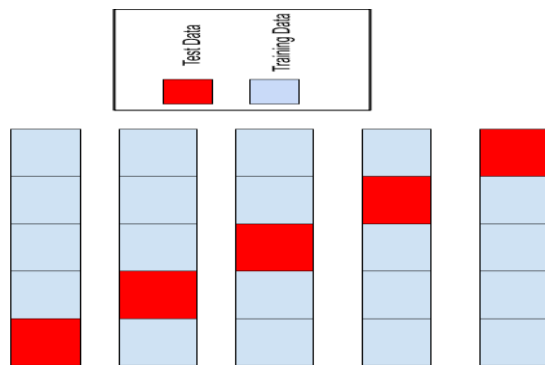
Appendix 1. The labeling process of proposed method

	F1	F2	Fn		Labels
Image(1)					1
Image(3)					1
.					1
.					1
.					0
.					0
.					0
Image(n)					0

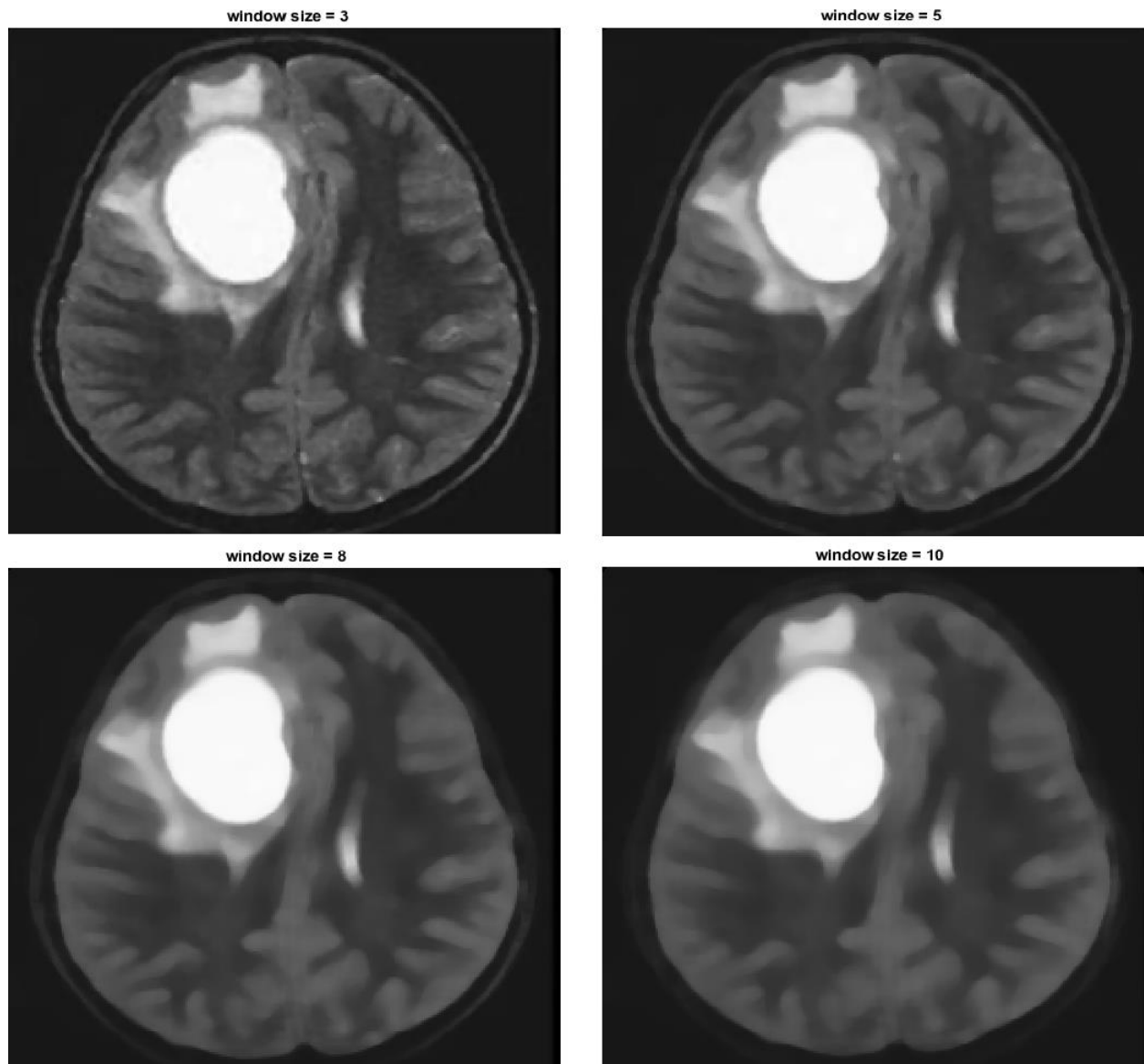
Appendix 2. Following figure shows the state space of data separation with the SVM algorithm and the steps to find the optimal hyperplane for data separation, a hyperplane with the maximum margin for a support vector machine learning with sample data from binomials. The data on the edge hyperplane are called support vectors.



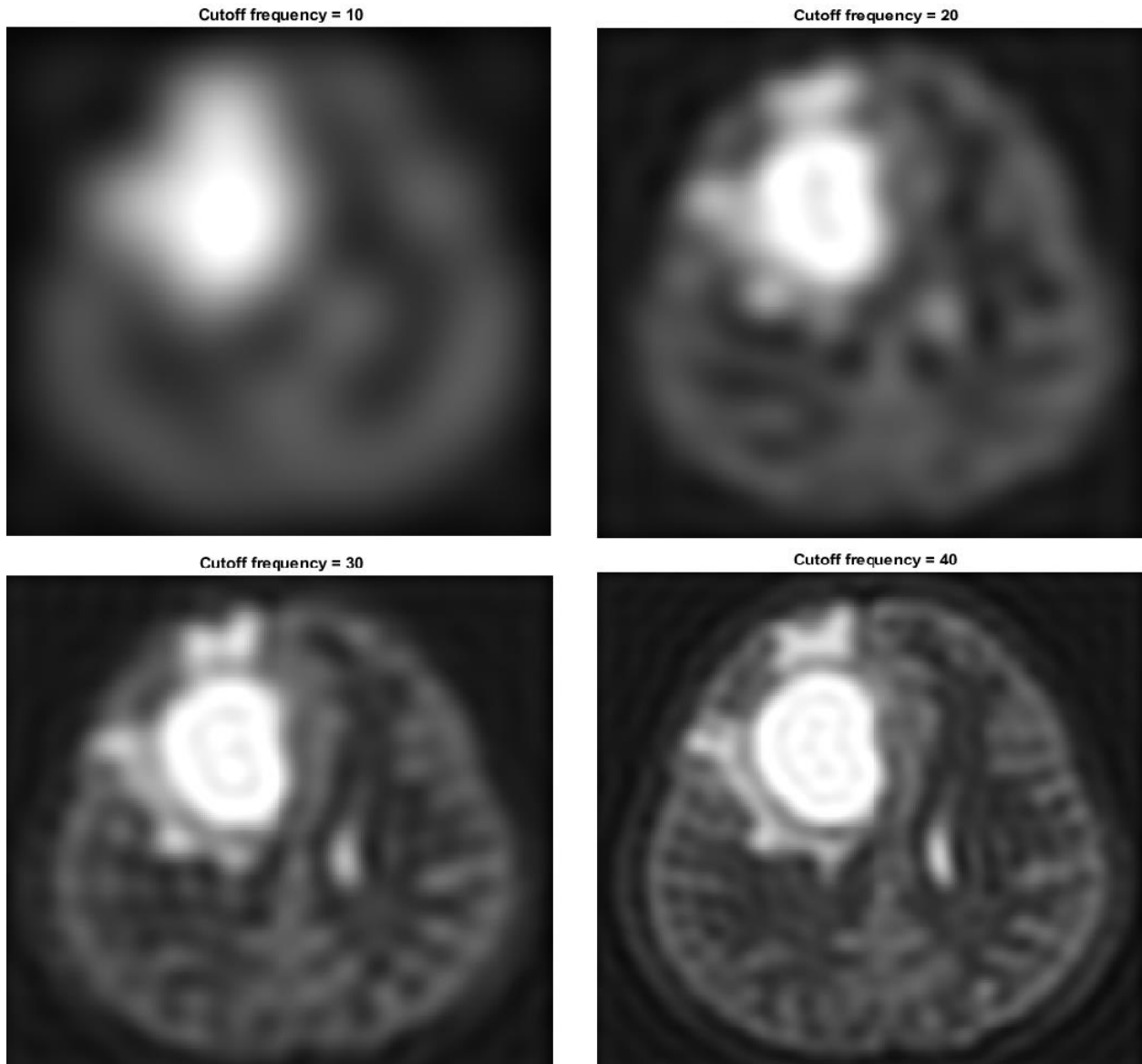
Appendix 3. The Figure shows how the cross-validation measure is used to estimate the model's skill on unseen data. That is, it uses a limited sample to estimate the model's overall performance when predicting data that is not used during model training [32].



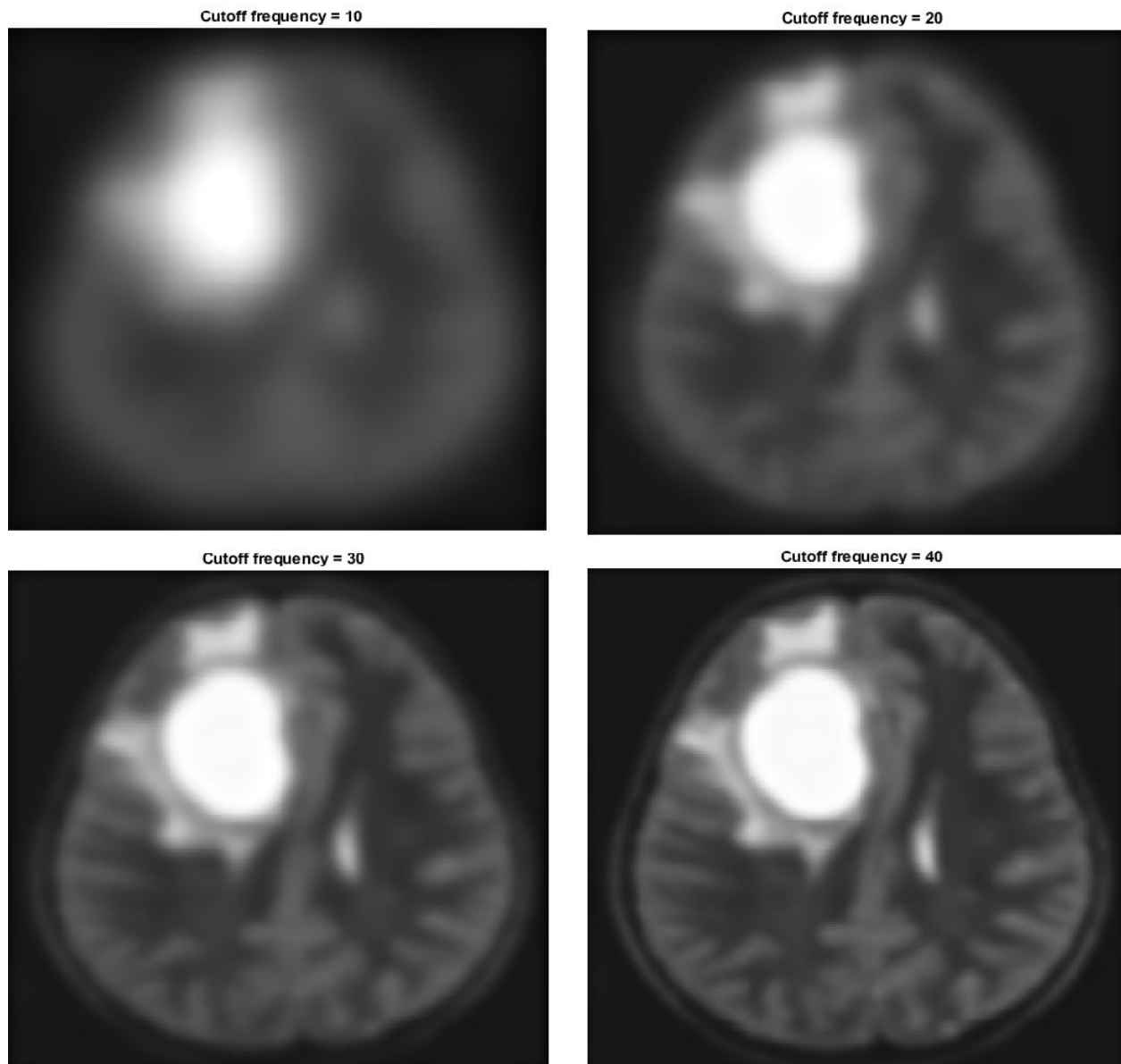
Appendix 4. The following figure shows the result of applying the median filter with window sizes 3,5,8,10 on MRI images. As shown in the Figure, with the increase in the filter window size, the blur in the image increases, and the image resolution decreases. In this study, the median filter with a window size of 3 in Figure A had the best performance on the images.



Appendix 5. The next figure shows the result of applying the Ideal filter to MRI images. Due to the shape of the low cut-off frequency, the filter does not have a good result on the images. Increasing the cut-off frequency may have a good result on the images in a small range at the infinity of the filter.



Appendix 6. The resulting figure shows the result of Butterworth filter performance on MRI images. The filter could perform better at low frequencies according to the shape. As the cut-off frequency increases, the filter performance increases linearly.



Appendix 7. The subsequent figure shows the result of the wavelet filter performance with the cut-off frequency [1,2,3,4] on MRI images. With the increase of the cut-off frequency, the filter performance should increase linearly. In this study, the cut-off frequency of 3 had more favorable results.

