

# Supplementary Material

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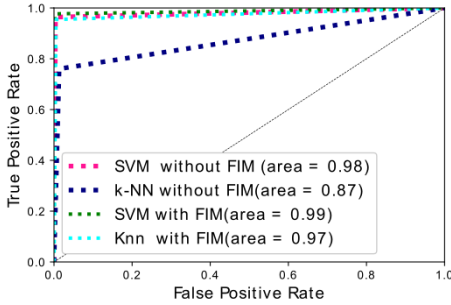
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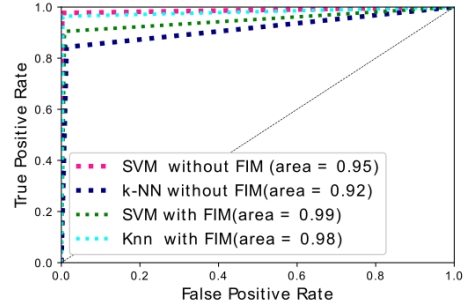
The UKRI Trustworthy Autonomous Systems (TAS) Hub,  
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## A AUC-ROC Results

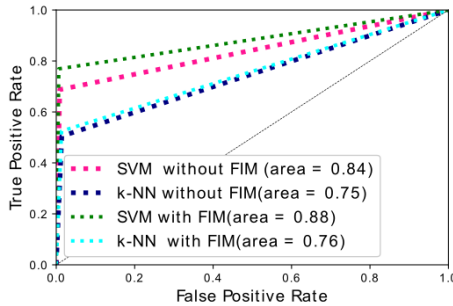
The performance of our proposed Fisher kernel approach across different classification thresholds is shown via the receiver operating characteristic (ROC) curve in Figure A1 for the MNIST, USPS, and Alphanumeric data sets. We observe that the utilisation of Fisher information matrix improves the AUC in all the data sets.



(a) MNIST



(b) USPS



(c) Alphanumeric

Figure A1: ROC curves of kernel approaches for MNIST, USPS, and Alphanumeric.

## B Additional Explainability Results

Below we provide the Fisher vector TSNE comparison plots for USPS (Figure A2) and Alphanumeric (Figure A3). We also give the global SHAP class explanations for USPS in Figure A4.

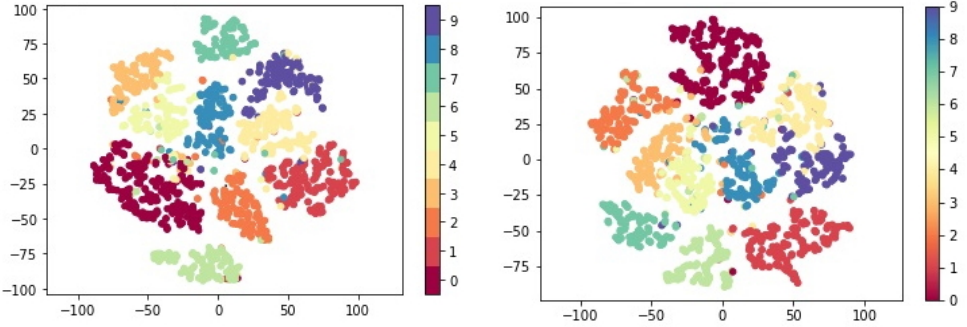


Figure A2: Comparison of the derived Fisher Vectors from IDFK (left) and DFK (right) for the USPS data set.

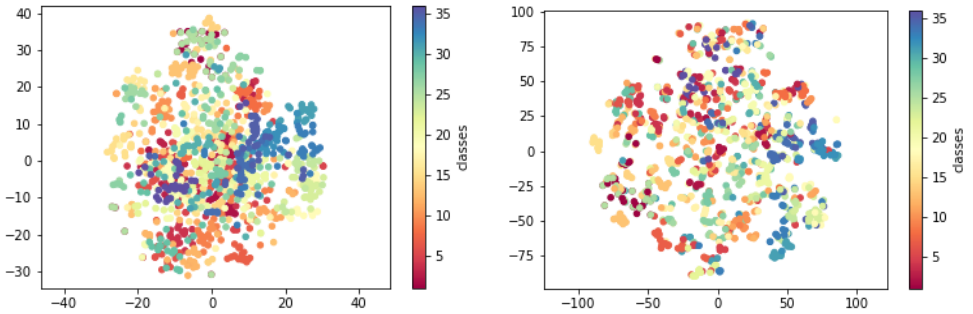


Figure A3: Comparison of the derived Fisher Vectors from IDFK (left) and DFK (right) for the Alphanumeric data set.

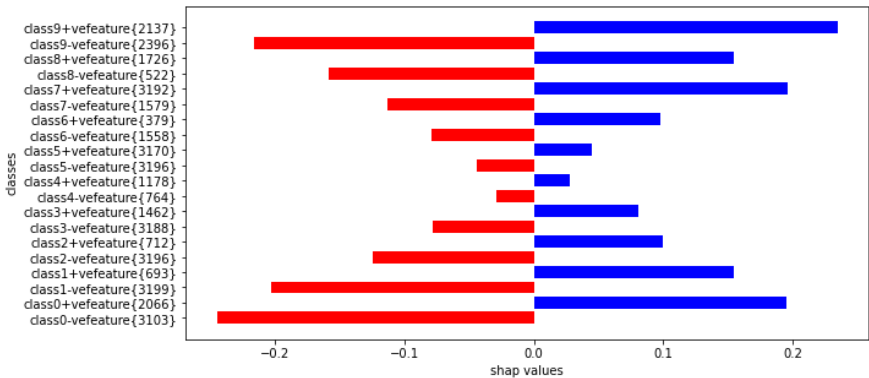


Figure A4: Top supporting and refuting features for each USPS class for the IDFK with  $k$ -NN classifier. These were derived using global SHAP explanations.