## MACHINE LEARNING MODEL COMPARISON BASED ON SOME METRICS

Safa ORHAN Eyüp USTA

Computer Engineering Student Computer Engineering Student

Istanbul Kultur University

Istanbul Kultur University

Istanbul, Turkey Istanbul, Turkey

## **Deep Learning Models**

```
Activation = 'softplus', 'softsign', 'selu', 'elu', 'exponential', 'sigmoid',
'relu', 'tanh'
Optimizers = 'sgd', 'rmsprop', 'adam', 'adadelta', 'adagrad', 'adamax', 'nadam',
Binary Loss = 'binary crossentropy, 'hinge', 'squared hinge', 'huber'
```

## **Model Architecture**

Phising Websites Dataset - Grega Vrbancic - data.mendeley.com - 24-09-2020

112 Features

DNN – 89.78 - 91.08 %

RNN - 94.51 - 93.44 % CNN - 90.33 - 90.09 %

Phishing Legitimate Full – 48 Features

DNN - 94.10 - 94.93 %

RNN – 93.37 - 94.77 %

CNN - 83.54 - 86.33 %

Website Phishing - Auckland Institute of Studies – 9 Features

DNN - 35.31 - 36.33 %

RNN – 35.71 - 44.72 %

CNN - 40.41 - 37.19 %

Dataset.csv – 13 Features

DNN - 86.60 - 90. 84 % RNN - 87.64 - 91.03 %

CNN - 86.60 - 90.04 %

LSTM	Dense	CNN	Dense	Dense	Output
	Layer	CIVIN	Layer	Layer	Output

93.31 % - 93.74 %

CNN	Dense	LOTM	Dense	Dense	Output
CNN	Layer	LSIM	Layer	Layer	Output

96.32 % - 95.64 %

Innut	Innut	Dense	Dense	Dense	LCTM	CNN	Output
Input	Layer	Layer	Layer	LSIM	CITI	Output	

96.03 % - 95.12 %

Input	Dense	Dense	Dense	CNN	LCTM	Output
Input	Layer	Layer	Layer	CITIT	LSTM	Output

97.26 % - 96.26 %

RNN + CNN

95.26 % - 94.84 %

CNN + RNN

86.48 % - 87.04 %