

COVID-19 FAKE NEWS CLASSIFIER

Alan Ismael Franquez Conchas
Francisco Tejeda Figueroa



01 LOGISTIC REGRESSION

--- LogisticRegression ---

Accuracy: 0.8009478672985783 | F1: 0.8388059701492537

	precision	recall	f1-score	support
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0	0.8445	0.6583	0.7398	1633
1	0.7790	0.9085	0.8388	2165

accuracy			0.8009	3798
macro avg	0.8117	0.7834	0.7893	3798
weighted avg	0.8072	0.8009	0.7963	3798

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THE LOGISTIC REGRESSION MODEL HAS AN OVERALL ACCURACY OF 80%. IT SHOWS GOOD PERFORMANCE, ESPECIALLY FOR CLASS 1, WHERE IT HAS HIGH RECALL, MEANING IT CORRECTLY IDENTIFIES MOST INSTANCES OF THIS CLASS.

02 LINEAR SVC

--- LinearSVC ---

Accuracy: 0.8212216956292786 | F1: 0.8473814340301191

	precision	recall	f1-score	support
0	0.8151	0.7557	0.7842	1633
1	0.8253	0.8707	0.8474	2165
accuracy			0.8212	3798
macro avg	0.8202	0.8132	0.8158	3798
weighted avg	0.8209	0.8212	0.8202	3798
...				
weighted avg	0.7708	0.7670	0.7615	3798

ACCORDING TO THE RESULTS PROVIDED, THE LINEARSVC IS THE MODEL THAT PRESENTS THE BEST PERFORMANCE FOR THE CLASSIFICATION TASK IN THIS DATA SET.

03 RANDOM FOREST

--- RandomForest ---				
		Accuracy: 0.7669826224328594 F1: 0.8113408654871029		
		precision	recall	f1-score
	0	0.7940	0.6185	0.6954
	1	0.7534	0.8790	0.8113
				1633
				2165
			accuracy	0.7670
		macro avg	0.7737	0.7487
		weighted avg	0.7708	0.7670
				3798
				3798
				3798

THE RANDOM FOREST MODEL HAS AN OVERALL ACCURACY OF 76.69%, WHICH IS LOWER THAN THE LINEARSVC AND LOGISTIC REGRESSION MODELS.

DEEP LEARNING – BILSTM Y CNN-1D (KERAS)

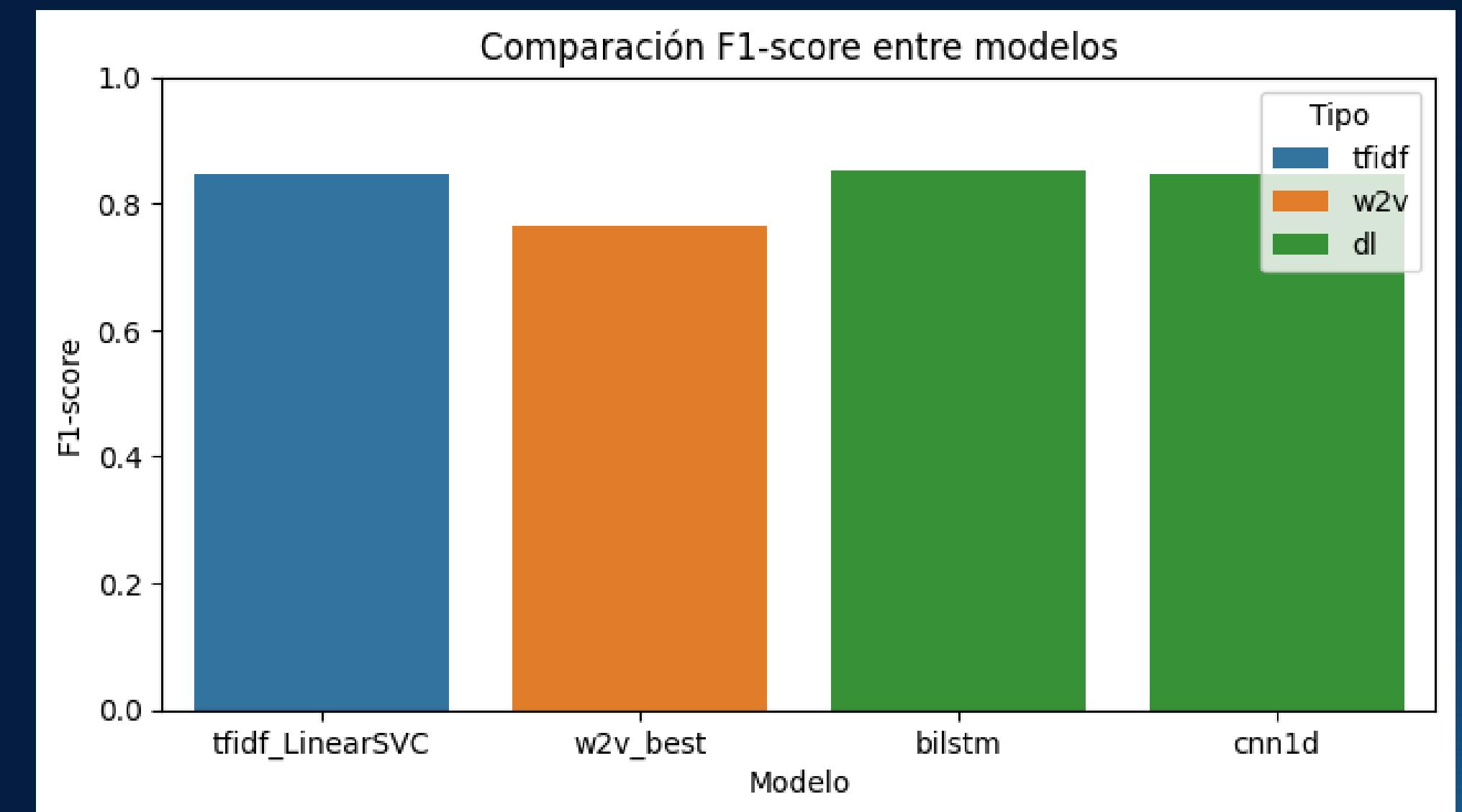
- Two neural network architectures are created:
- BiLSTM: A bidirectional LSTM network, useful for capturing word context in both directions.
- 1D-CNN: A 1D convolutional network, which detects local patterns in word sequences.

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Epoch 1/10
547/547 - 204s - 372ms/step - accuracy: 0.7751 - loss: 0.4665 - val_accuracy: 0.8594 - val_loss: 0.3315
Epoch 2/10
547/547 - 199s - 364ms/step - accuracy: 0.9144 - loss: 0.2232 - val_accuracy: 0.8615 - val_loss: 0.3372
Epoch 3/10
547/547 - 320s - 586ms/step - accuracy: 0.9594 - loss: 0.1144 - val_accuracy: 0.8508 - val_loss: 0.4170
Epoch 4/10
547/547 - 318s - 581ms/step - accuracy: 0.9774 - loss: 0.0668 - val_accuracy: 0.8495 - val_loss: 0.5615
Epoch 5/10
547/547 - 206s - 376ms/step - accuracy: 0.9875 - loss: 0.0372 - val_accuracy: 0.8448 - val_loss: 0.7196
BiLSTM test acc: 0.8317535519599915
Epoch 1/10
547/547 - 85s - 156ms/step - accuracy: 0.7868 - loss: 0.4527 - val_accuracy: 0.8733 - val_loss: 0.3169
Epoch 2/10
547/547 - 82s - 150ms/step - accuracy: 0.9092 - loss: 0.2325 - val_accuracy: 0.8623 - val_loss: 0.3347
Epoch 3/10
547/547 - 80s - 146ms/step - accuracy: 0.9651 - loss: 0.1027 - val_accuracy: 0.8503 - val_loss: 0.4225
Epoch 4/10
547/547 - 79s - 145ms/step - accuracy: 0.9873 - loss: 0.0421 - val_accuracy: 0.8445 - val_loss: 0.5814
CNN-1D test acc: 0.8262243270874023
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05

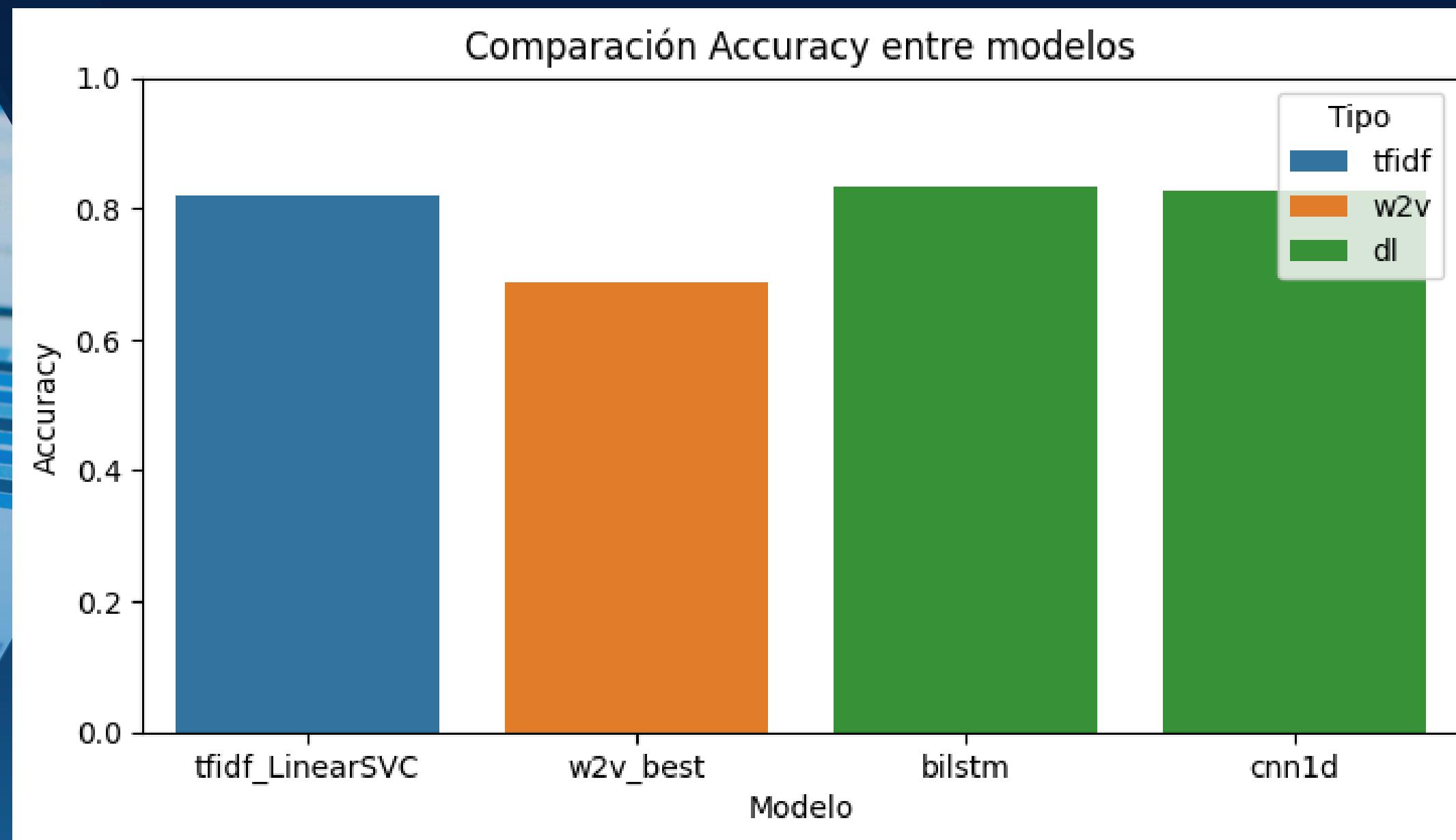
COMPARISON OF F1 SCORES BETWEEN MODELS

We can see the percentage difference between the models, with the last 2 standing out.



06

COMPARISON ACCURACY BETWEEN MODELS



THANK YOU

