|                    |                                 |                    |          |                     |          | N                   | Modelos   |                     |          |                     |          |  |
|--------------------|---------------------------------|--------------------|----------|---------------------|----------|---------------------|-----------|---------------------|----------|---------------------|----------|--|
|                    |                                 | TFID               | F+MLP    | GloV                | e+MLP    | GloVe+F             | ineTuning | FastTe              | xt+MLP   | FastText+FineTuning |          |  |
|                    |                                 | Instâncias = 16704 |          | Instâncias = 133632 |          | Instâncias = 133632 |           | Instâncias = 133632 |          | Instâncias = 13363  |          |  |
| Base               | Hiper-parâmetros                | F1 Score           | Acurácia | F1 Score            | Acurácia | F1 Score            | Acurácia  | F1 Score            | Acurácia | F1 Score            | Acurácia |  |
|                    | Dropout = 0.05                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 5e-4            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_01  | Epocas = 5                      | 0.97               | 0.91     | 0.76                | 0.76     | 0.80                | 0.80      | 0.87                | 0.87     | 0.84                | 0.83     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    |                                 |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.05                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 1e-3            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_02  | Epocas = 5                      | 0.98               | 0.93     | 0.79                | 0.78     | 0.81                | 0.80      | 0.87                | 0.87     | 0.85                | 0.84     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    |                                 |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.05                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 5e-3            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_03  | Epocas = 5                      | 0.99               | 0.95     | 0.77                | 0.77     | 0.80                | 0.80      | 0.87                | 0.87     | 0.87                | 0.86     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.05                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 1e-2            | +                  | 0.95     | 0.76                | 0.76     | 0.78                | 0.77      | 0.86                | 0.85     |                     | 0.86     |  |
| Buscape_treino_04  | Epocas = 5                      | 0.99               |          |                     |          |                     |           |                     |          | 0.86                |          |  |
| Saddapo_tromio_o : | K-folds = 10                    |                    |          |                     |          | 0.70                |           |                     |          | 0.00                |          |  |
|                    | 10-10103 = 10                   | †                  |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.15                  | 0.96               | 0.89     | 0.77                |          |                     |           | 0.86                | 0.86     |                     |          |  |
|                    | Learning rate = 5e-4            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_05  | Epocas = 5                      |                    |          |                     | 0.77     | 0.80                | 0.80      |                     |          | 0.84                | 0.83     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    |                                 |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.15                  | 0.98               | 0.92     | 0.78                |          |                     |           | 0.87                |          |                     |          |  |
|                    | Learning rate = 1e-3            |                    |          |                     | 0.79     |                     | 0.80      |                     | 0.87     |                     | 0.84     |  |
| Buscape_treino_06  | Epocas = 5                      |                    |          |                     |          | 0.80                |           |                     |          | 0.84                |          |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.15                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 5e-3            | 0.99               | 0.95     | 0.78                |          |                     |           |                     |          |                     | 0.86     |  |
| Buscape_treino_07  | Epocas = 5                      |                    |          |                     | 0.77     | 0.79                | 0.79      | 0.87                | 0.87     | 0.86                |          |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    |                                 | 1                  |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.15                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 1e-2            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_08  | Epocas = 5                      | 0.99               | 0.95     | 0.76                | 0.76     | 0.76                | 0.76      | 0.86                | 0.86     | 0.86                | 0.86     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    |                                 |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.25                  | -                  |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_09  | Learning rate = 5e-4 Epocas = 5 | 0.95               | 0.89     | 0.76                | 0.76     | 0.80                | 0.79      | 0.86                | 0.85     | 0.83                | 0.83     |  |
| suscape_tremo_09   |                                 | 0.95               | 0.69     | 0.76                | 0.76     | 0.80                | 0.79      | 0.00                | 0.65     | 0.63                | 0.63     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.25                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 1e-3            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_10  | Epocas = 5                      | 0.98               | 0.91     | 0.77                | 0.77     | 0.79                | 0.79      | 0.87                | 0.86     | 0.84                | 0.84     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    |                                 |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Dropout = 0.25                  |                    |          |                     |          |                     |           |                     |          |                     |          |  |
|                    | Learning rate = 5e-3            |                    |          |                     |          |                     |           |                     |          |                     |          |  |
| Buscape_treino_11  | Epocas = 5                      | 0.99               | 0.94     | 0.77                | 0.76     | 0.79                | 0.79      | 0.85                | 0.84     | 0.86                | 0.85     |  |
|                    | K-folds = 10                    |                    |          |                     |          |                     |           |                     |          |                     |          |  |

|                   | Dropout = 0.25             |      |      |      |      |      |      |      |      |      |      |
|-------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|
|                   | Learning rate = 1e-2       | 1    |      |      | 0.76 | 0.79 | 0.79 | 0.85 | 0.84 | 0.85 | 0.85 |
| Buscape_treino_12 | Epocas = 5                 | 0.99 | 0.94 | 0.76 |      |      |      |      |      |      |      |
|                   | K-folds = 10               | 0.55 | 0.54 | 0.70 | 0.70 |      |      |      |      |      |      |
|                   | K-10lus = 10               |      |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.35             |      |      |      |      |      |      |      |      |      |      |
|                   | Learning rate = 5e-4       | +    |      |      |      |      |      |      |      |      |      |
| Buscape_treino_13 |                            | 0.95 | 0.88 | 0.76 | 0.76 | 0.79 | 0.79 | 0.85 | 0.85 | 0.83 | 0.83 |
| buscape_treino_13 | Epocas = 5<br>K-folds = 10 | 0.95 | 0.00 | 0.76 | 0.76 | 0.79 | 0.79 | 0.65 | 0.65 | 0.63 | 0.63 |
|                   | K-10IdS = 10               | 4 ,  |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.35             |      |      |      |      |      |      |      |      |      |      |
|                   |                            | 4    |      |      |      |      |      |      |      |      |      |
| Durana tarina 44  | Learning rate = 1e-3       | 0.07 | 0.04 | 0.70 | 0.78 | 0.70 | 0.79 | 0.85 | 0.85 | 0.84 | 0.83 |
| Buscape_treino_14 | Epocas = 5                 | 0.97 | 0.91 | 0.78 | 0.78 | 0.79 | 0.79 | 0.85 | 0.85 | 0.84 | 0.83 |
|                   | K-folds = 10               |      |      |      |      |      |      |      |      |      |      |
|                   | D 1 005                    |      |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.35             |      |      |      |      |      |      |      |      |      |      |
|                   | Learning rate = 5e-3       |      | 0.94 | 0.77 | 0.77 | 0.79 | 0.78 | 0.85 | 0.85 | 0.00 |      |
| Buscape_treino_15 | Epocas = 5                 | 0.99 |      |      |      |      |      |      |      | 0.86 | 0.86 |
|                   | K-folds = 10               |      |      |      |      |      |      |      |      |      |      |
|                   |                            |      |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.35             | 0.99 | 0.94 | 0.75 | 0.75 |      | 0.75 |      |      |      |      |
|                   | Learning rate = 1e-2       |      |      |      |      |      |      | 0.85 |      |      |      |
| Buscape_treino_16 | Epocas = 5                 |      |      |      |      | 0.75 |      |      | 0.84 | 0.85 | 0.84 |
|                   | K-folds = 10               |      |      |      |      |      |      |      |      |      |      |
|                   |                            |      |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.50             | 4    |      |      |      |      |      |      |      |      |      |
|                   | Learning rate = 5e-4       | 0.94 | 0.87 | 0.79 | 0.79 | 0.78 | 0.78 |      |      | 0.83 |      |
| Buscape_treino_17 | Epocas = 5                 |      |      |      |      |      |      | 0.85 | 0.84 |      | 0.82 |
|                   | K-folds = 10               | 1    |      |      |      |      |      |      |      |      |      |
|                   | TC TOTAL TO                | †    |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.50             |      |      |      |      |      |      |      |      |      |      |
|                   | Learning rate = 1e-3       | 0.97 |      | 0.76 | 0.76 | 0.79 | 0.79 | 0.85 |      |      |      |
| Buscape_treino_18 | Epocas = 5                 |      | 0.90 |      |      |      |      |      | 0.84 | 0.83 | 0.83 |
| Buddapo_iromo_ro  | K-folds = 10               | 0.07 | 0.00 |      |      |      |      |      | 0.01 | 0.00 | 0.00 |
|                   | 11.5.00                    | 1    |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.50             |      |      |      |      |      |      |      |      |      |      |
|                   | Learning rate = 5e-3       |      |      |      |      |      |      |      |      |      |      |
| Buscape_treino_19 | Epocas = 5                 | 0.98 | 0.93 | 0.77 | 0.77 | 0.78 | 0.78 | 0.84 | 0.83 | 0.84 | 0.84 |
|                   | K-folds = 10               | 0.96 | 0.93 |      |      |      |      |      |      |      |      |
|                   | 10103 = 10                 |      |      |      |      |      |      |      |      |      |      |
|                   | Dropout = 0.50             |      |      |      |      |      |      |      |      |      |      |
|                   | Learning rate = 1e-2       | 0.98 | 0.92 | 0.75 | 0.75 |      | 0.74 | 0.84 | 0.83 |      |      |
| Buscape_treino_20 | Epocas = 5                 |      |      |      |      | 0.74 |      |      |      | 0.84 | 0.83 |
| buscape_tremo_20  |                            | 0.50 | 0.02 |      |      |      |      |      | 0.00 | 0.04 | 0.00 |
|                   | K-folds = 10               | -    |      |      |      |      |      |      |      |      |      |
|                   |                            |      |      |      |      |      |      |      |      |      |      |

|         | Testes Estatísticos - base buscape - transformers |                         |          |                         |          |                        |          |                        |          |                          |          |                         |          |                         |                 |                    |                    |
|---------|---|-------------------------|----------|-------------------------|----------|------------------------|----------|------------------------|----------|--------------------------|----------|-------------------------|----------|-------------------------|-----------------|--------------------|--------------------|
|         | Modelos Modelos                                   |                         |          |                         |          |                        |          |                        |          |                          |          |                         |          |                         |                 |                    |                    |
|         |   | TLM Pequeno + FB1 + MLP |          | TLM Pequeno + FB2 + MLP |          | TLM Grande + FB1 + MLP |          | TLM Grande + FB2 + MLP |          | TLM Pequeno + FineTuning |          | TLM Grande + FineTuning |          | TLM Pequeno Multilíngua |                 |                    |                    |
|         |   | Instâncias = 13         | 3632     | Instâncias = 13         | 3632     | Instâncias = 13        | 3632     | Instâncias = 133       | 632      | Instâncias = 13363       | 2        | Instâncias = 133632     |          | Instâncias = 133632     | 2               |                    |                    |
| Base    | Hiper-parâmetros                                  | F1 Score                | Acurácia | F1 Score                | Acurácia | F1 Score               | Acurácia | F1 Score               | Acurácia | F1 Score                 | Acurácia | F1 Score                | Acurácia | F1 Score Treino         | Acurácia Treino | F1 Score Validação | Acurácia Validação |
|         | Dropout = 0                                       | 0.8803                  |          |                         | 0.8350   | 0.8680                 | 0.8646   | 0.9114                 | 0.9087   | 0.8940 0.89              | 0.8915   | 0.8888 0.884            | 0.8849   | 0.8325                  | 0.8251          | 0.8312             |                    |
| Buscape | Learning rate = 2.5e-5                            |                         | 0.875    | 0.8388                  |          |                        |          |                        |          |                          |          |                         |          |                         |                 |                    | 0.8279             |
| Бизсарс | Epocas = 5  |                         | 0.070    | 0.0000                  |          |                        |          |                        | 0.5007   |                          |          |                         | 0.0043   |                         |                 |                    |                    |
|         | K-folds = 10                                      |                         |          |                         |          |                        |          |                        |          |                          |          |                         |          |                         |                 |                    |                    |
|         | Dropout = 0                                       |                         |          |                         |          |                        |          |                        | 0.8687   | 0.8894 0.8865            |          | 0.8920 0.8              | 0.8884   | 0.847                   |                 |                    |                    |
| Buscape | Learning rate = 5e-5                              | 0.8769 0                | 0.8682   | 0.8517                  | 0.8482   | 0.8740                 | 0.8704   | 0.8769                 |          |                          | 0.8865   |                         |          |                         | 0.8406          | 0.845              | 0.8432             |
| Бизоаро | Epocas = 5  |                         | 0.0002   |                         |          |                        |          |                        |          |                          | 0.000    |                         |          |                         |                 | 0.045              |                    |
|         | K-folds = 10                                      |                         |          |                         |          |                        |          |                        |          |                          |          |                         |          |                         |                 |                    |                    |

|        |         | Dropout = 0.10         | -0.8686 | 0.8543 |        | 0.8293 | 0.8725 | 0.8675 | 0.8746 0 | 0.8570 |        | 0.8910 | 0.8891 | 0.8852 | 0.8317 | 0.8194 | 0.8312 |        |
|--------|---------|------------------------|---------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Buscar | Ruscano | Learning rate = 2.5e-5 |         |        | 0.8335 |        |        |        |          |        | 0.8931 |        |        |        |        |        |        | 0.8284 |
|        | ouscape | Epocas = 5             |         |        | 0.8333 |        |        |        |          |        |        |        |        |        |        |        |        | 0.0204 |
|        |         | K-folds = 10           |         |        |        |        |        |        |          |        |        |        |        |        |        |        |        |        |
| Bu     |         | Dropout = 0.10         | 0.8832  | 0.8713 |        | 0.8515 | 0.8843 | 0.8796 | 0.8863   | 0.8724 | 0.9028 | 0.9009 | 0.8938 | 0.8890 | 0.8595 | 0.8443 | 0.8569 | 0.8544 |
|        |         | Learning rate = 5e-5   |         |        | 0.8574 |        |        |        |          |        |        |        |        |        |        |        |        |        |
|        | Buscape | Epocas = 5             |         |        | 0.8574 |        |        |        |          |        |        |        |        |        |        | 0.6443 | 0.0009 |        |
|        |         | K-folds = 10           |         |        |        |        |        |        |          |        |        |        |        |        |        |        |        |        |