RESULTADOS DE LOS MODELOS DE RED PARA NER

Tipo de Modelo	Preci.	Recall	F1-Score	Epochs	Batch Size
Modelo 1. Bilstm+CRF+enterizacion	68.1%	60.2%	63.9%		
Modelo 2. Bilstm+CRF+embedding	69.2%	65.2%	67.1%	30	128
Modelo 2. Bilstm+CRF+embedding	61.9%	67.4%	64.5%	50	128
Modelo 2. Bilstm+CRF+embedding	66.7%	67.4%	67.0%	80	128
Modelo 3. LSTM(Bilstm)+CRF+embedding (Con LSTM)	60.8%	64.6%	62.6%	30	128
Modelo 3. LSTM(Bilstm)+CRF+embedding (Con LSTM)	63.1%	68.6%	65.7%	50	128
Modelo 3. LSTM(Bilstm)+CRF+embedding (Con LSTM)	65.3%	67.8%	66.5%	80	128
Modelo 3. LSTM(Bilstm)+CRF+embedding (Sin LSTM, Solo masking)	65.1%	66.3%	65.7%	30	128
Modelo 3. LSTM(Bilstm)+CRF+embedding (Sin LSTM, Solo masking)	70%	67.9.0%	69.0%	50	128
Modelo 3. LSTM(Bilstm)+CRF+embedding (Sin LSTM, Solo masking)	68.3%	68.4%	68.4%	80	128

Modelo 3. LSTM(Bilstm)+CRF+embedding (Con LSTM)

```
from tf2crf import CRF as crf6
import keras as k
from mwrapper import ModelWithCRFLoss, ModelWithCRFLossDSCLoss
from keras.layers import Masking

input = Input(shape=(MAX_LENGTH,))
word_embedding_size = 300
EMBED_DIM = 300
# Embedding Layer
model = Embedding(input_dim=len(word2index),
                  weights=[embedding_matrix],  # Initializing with FastText embeddings
                output_dim=word_embedding_size,
                input_length=MAX_LENGTH,
                mask_zero=False)(input)

model = Bidirectional(LSTM(units=50,
                     return_sequences=True,
                     dropout=0.5,
                     recurrent_dropout=0))(model)
model = LSTM(units=50,
                     return_sequences=True,
                     dropout=0.5,
                     recurrent_dropout=0)(model)

model  = Dropout(0.5, name='dropout_lstm')(model)
model  = Dense(units=EMBED_DIM, activation='tanh')(model)
model  = Dense(units=len(tag2index), activation='tanh')(model) # Distribucion de probabilidad

model = Masking(mask_value= 0.,input_shape=(MAX_LENGTH,len(tag2index)))(model)

crf = crf6(units=len(tag2index), name="ner_crf")
predictions = crf(model)

base_model = Model(inputs=input, outputs=predictions)
model = ModelWithCRFLoss(base_model, sparse_target=True)
#keras.mixed_precision.set_global_policy("mixed_float16")
model.compile(optimizer='adam')
```

```
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```

Modelo 3. LSTM(Bilstm)+CRF+embedding (Sin LSTM, Solo masking)

```
from tf2crf import CRF as crf6
import keras as k
from mwrapper import ModelWithCRFLoss, ModelWithCRFLossDSCLoss
from keras.layers import Masking

input = Input(shape=(MAX_LENGTH,))
word_embedding_size = 300
EMBED_DIM = 300
# Embedding Layer
model = Embedding(input_dim=len(word2index),
                  weights=[embedding_matrix],  # Initializing with FastText embeddings
                  output_dim=word_embedding_size,
                  input_length=MAX_LENGTH,
                  mask_zero=False)(input)
model = Bidirectional(LSTM(units=50,
                           return_sequences=True,
                           dropout=0.5,
                           recurrent_dropout=0))(model)

model  = Dropout(0.5, name='dropout_lstm')(model)
model  = Dense(units=EMBED_DIM, activation='tanh')(model)
model  = Dense(units=len(tag2index), activation='tanh')(model)

model = Masking(mask_value= 0.,input_shape=(MAX_LENGTH,len(tag2index)))(model)

crf = crf6(units=len(tag2index), name="ner_crf")
predictions = crf(model)

base_model = Model(inputs=input, outputs=predictions)
model = ModelWithCRFLoss(base_model, sparse_target=True)
#keras.mixed_precision.set_global_policy("mixed_float16")
model.compile(optimizer='adam')
```

Mejor Resultado

Tipo de Modelo	Preci.	Recall	F1-Score	Epochs	Batch Size
Modelo 3. LSTM(Bilstm)+CRF+embedding (Sin LSTM, Solo masking)	70%	65.0%	67.0%	50	128

```
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La    Federación    nacional    de     cafeteros    de     Colombia    es    una    entidad    del    estado    ,    creada    en    los    años    70’s    .
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El    primer    presidente    el    Dr     Augusto    Guerra    contó    con    el    aval    de    la    Asociación    Colombiana    de    Aviación
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En    varias    ciudades    colombianas    ;    Cali    ,    medellín    ,    corozal    funciona    la    entidad    .
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Estas    personas    viene    del    instituto    colombiano    del    café    ubicado    en    la    calle    Cali    .
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