Curso Data Science

RoBERTa

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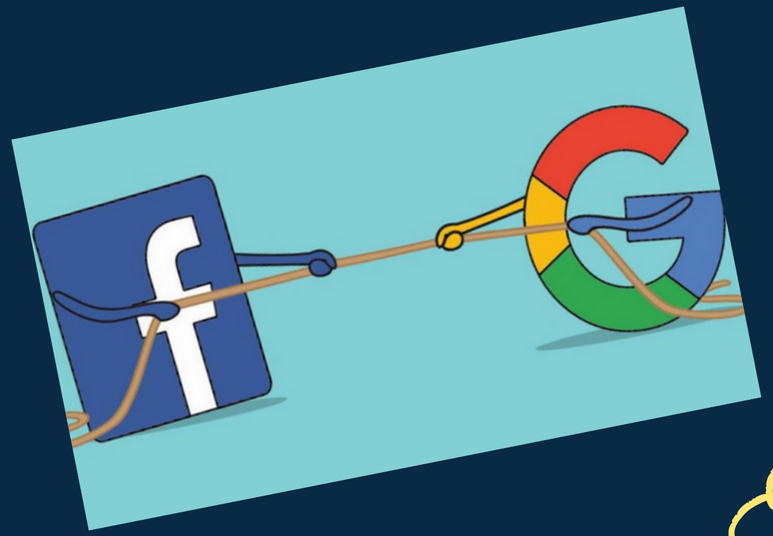
DEFINICION

RoBERTa es un modelo de PLN desarrollado por Facebook

Está basado en el modelo BERT. Pero se re-entrenó con mejoras en su metodología, más datos y mayor poder computacional, obteniendo mejores resultados en varias métricas.



The language model family

ELMO

Transformer

ULMFit

BERT

Bi-directional LM

GPT

+Data
+Model size

GPT-2

Defense

Grover

Permutation LM
TransformerXL
+Data

XLNet

XLM

Crosslingual

MT-DNN

Multitask

+Knowledge graph

ERNIE (Tsinghua)

Text2Text
+Data

T5

Masked spans

SpanBERT

+Data
+Train time
+Batchsize
-NSP

RoBERTa

Shared weights
NSP → Sentence order
Factorized Embedding

ALBERT

-Model size

Q-BERT

DistilBERT

deepset.ai

METODOLOGIA

- **IMPLEMENTADO EN PYTORCH**
  vs. TensorFlow
- **ELIMINACION DEL ENTRENAMIENTO NSP**
  (Next Sentence Prediction)
- **USO DE LOTES MÁS GRANDES**
  (8000 VS. 256)
- **ENTRENAMIENTO CON 160 GB DE TEXTO**
  vs. 16 GB
- **USO DE ENMARCARAMIENTO DINAMICO**
  VS. Estatico
- **MAYOR TIEMPO DE ENTRENAMIENTO**
  4-5 veces mas

RESULTADOS

- SUPERÓ A BERT Y XLNET EN RACE Y EN GLUE
- PUNTUACIÓN PROMEDIO MÁS ALTA EN LA TABLA DE CLASIFICACION DE GLUE

  (88,5)
- NUEVO PUNTAJE MAS ALTO EN LA TABLA DE CLASIFICACIÓN PÚBLICA DE SQUAD

General Mathematics Curriculum

We will study basic mathematical concepts, principles and procedures.

We will cover principles of algebra, geometry and trigonometry. We will learn to use mathematical analysis and problem solving to prepare you for advanced courses.

Model	SQuAD 1.1		SQuAD 2.0	
	EM	F1	EM	F1
Single models on dev, w/o data augmentation				
$\text{BERT}_{\text{LARGE}}$	84.1	90.9	79.0	81.8
$\text{XLNet}_{\text{LARGE}}$	**89.0**	94.5	86.1	88.8
RoBERTa	88.9	**94.6**	**86.5**	**89.4**
Single models on test (as of July 25, 2019)				
$\text{XLNet}_{\text{LARGE}}$			86.3†	89.1†
RoBERTa			86.8	89.8
XLNet + SG-Net Verifier			**87.0**†	**89.9**†

Model	Accuracy	Middle	High
Single models on test (as of July 25, 2019)			
$\text{BERT}_{\text{LARGE}}$	72.0	76.6	70.1
$\text{XLNet}_{\text{LARGE}}$	81.7	85.4	80.2
RoBERTa	**83.2**	**86.5**	**81.3**

APLICACION

Wang, Y., Sun, Y., Ma, Z., Gao, L., Xu, Y., & Sun, T. (2020, August). Application of pre-training models in named entity recognition.

CONSIDERACIONES

- Problema de NER
- Uso del MSRA-2006 dataset
- Uso de 2 epocas
- Razon de aprendizaje de 5e-5
- Tamaño de lote de 16

MODELOS

- BERT
- ERNIE
- ERNIE2.0-tiny
- RoBERT

RESULTADOS

THE RESULTS OF NER USING DIFFERENT PRE-TRAINING MODELS

Models	Precision/%	Recall/%	F1/%
Baseline	92.54	88.20	90.32
BERT-base	92.68	94.18	93.30
ERNIE	92.92	94.07	93.37
ERNIE-tiny	83.89	89.88	86.52
RoBERTa	**93.64**	**94.93**	**94.17**

REFERENCIAS

1. Liu, Y., Ott, M., Goyal, N., Du, J., Joshi, M., Chen, D., ... & Stoyanov, V. (2019). Roberta: A robustly optimized bert pretraining approach. arXiv preprint arXiv:1907.11692.
2. Wang, Y., Sun, Y., Ma, Z., Gao, L., Xu, Y., & Sun, T. (2020, August). Application of pre-training models in named entity recognition. In 2020 12th International Conference on Intelligent Human-Machine Systems and Cybernetics (IHMSC) (Vol. 1, pp. 23-26). IEEE.