Machina Lagraina máthadas at solutions

Machine Learning, méthodes et solutions

RNN avec Keras

RNN avec Keras

```
model = tf.keras.Sequential()
model.add(layers.Embedding(input_dim=1000, output_dim=64))
model.add(layers.SimpleRNN(128))
model.add(layers.Dense(10, activation='softmax'))
model.summary()
```

1	Layer (type)	Output Shape	Param #
2			
3	<pre>embedding_1 (Embedding)</pre>	(None, None, 64)	64000
4			
5	simple_rnn (SimpleRNN)	(None, 128)	24704
6			
7	dense_1 (Dense)	(None, 10)	1290
8			
9	Total params: 89,994		
10	Trainable params: 89,994		
11	Non-trainable params: 0		

LSTM avec Keras

```
model = tf.keras.Sequential()
model.add(layers.Embedding(input_dim=1000, output_dim=64))
model.add(layers.LSTM(128))
model.add(layers.Dense(10, activation='softmax'))
model.summary()
```

1	Layer (type)	Output Shape	Param #
2			
3	embedding_2 (Embedding)	(None, None, 64)	64000
4			
5	lstm_1 (LSTM)	(None, 128)	98816
6			
7	dense_2 (Dense)	(None, 10)	1290
8			
9	Total params: 164,106		
10	Trainable params: 164,106		
11	Non-trainable params: 0		

GRU avec Keras

```
model = tf.keras.Sequential()
model.add(layers.Embedding(input_dim=1000, output_dim=64))
model.add(layers.GRU(128))
model.add(layers.Dense(10, activation='softmax'))
model.summary()
```

1	Layer (type)	Output Shape	Param #
2			
3	embedding_3 (Embedding)	(None, None, 64)	64000
4			
5	gru (GRU)	(None, 128)	74112
6			
7	dense_3 (Dense)	(None, 10)	1290
8			
9	Total params: 139,402		
10	Trainable params: 139,402		
11	Non-trainable params: 0		

Deep Encoder avec Keras

On peut demander à un layer récurrent à de fournir une output pour chaque timestep :

```
model = tf.keras.Sequential()
model.add(layers.Embedding(input_dim=1000, output_dim=64))
model.add(layers.GRU(256, return_sequences=True))
model.add(layers.SimpleRNN(128))
model.add(layers.Dense(10, activation='softmax'))
```

1	Layer (type)	Output Shape	Param #
2			
3	<pre>embedding_3 (Embedding)</pre>	(None, None, 64)	64000
4			
5	gru (GRU)	(None, 128)	74112
6			
7	dense_3 (Dense)	(None, 10)	1290
8			