Deep Learning Lab - Assignment 2

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1 Preambula

Below there is a list of all the material I used in order to develop this project.

- Tutorial provided in the Deep Learning class slides

- Marting Grner talk and code.

- Illarion Khlestov'blog.

- Tensorflow source code, since the docs is incomplete sometimes.

- Some blog posts on medium, but lots of them where just wrong.

2 Web App

I created a web app that accept a input from the user and response with the generated text from my model. You can find it here.

3 Implementation

All the code is open source and hosted on my GitHub here. You can check my commits to see when I started to work on it and how I managed to implement it. All the model's file are in *core/model* module. We also provided a cli to quickly use the model, type `python3 main.py --help` in order to see the available options.

3.1 Generate text

The following snippet shows how to generate 500 chars using 'TEST' as starting input from the *shakespeare* model:

```
python3 main.py --generate=True --from_model='./
   checkpoints/shakespeare' --n_text=500 --
   start_text="TEST"
```

3.2 Train model

If you wish to train it:

```
python3 main.py --train=True --file='data/
   shakespeare'
```

4 Results

Using three layers of 512 neurons each with dropout, sequence length of 100, batch size of 64 and learning rate of 0.001 we get the following results.

4.1 Shakespeare

I used Shakespare as text input in order to compare my work Marting Grner and because I love theatre. The following text is generated by using FRANCESCO, my name, as starting text.

```
FRANCESCO       The court of Lear, a strange man,
   and his soldiers
        that shows the pains to seem to straight at
           them.

LADY MACBETH    We have no more of that than this to
   -morrow.

CLOTEN  It is no man in this to make her beat him.
        The king's and this as much, to see him true
           .
```

```
CARDINAL WOLSEY Wilt thou not stand, my lord? what
    say'st thou? then?

KING LEAR       If thou dost seek a song to the
    divinity,
        I had as lief be sunder'd. I am sorry
        That thou deservest to think that thou dost
            seem.

        [To KING LEAR]

        We are a merry tribunes, thou art dead.

Second Gentleman        What is't time?

Second Leap     To brave a bargain, and the book of
    the way.

CARDINAL WOLSEY What seal'st he not a messenger? I
    hope
        We have no fortune to this strain and stand
        The sea till they are starter.

CARDINAL WOLSEY This is a soul,
        To bring his power in the sea, till the best
            best
        Of this beloved man that should have stay'd,
        Which they are sorry in the sea that was
        As though in such a painter: that they are
            not
```

We generated 20 files with 1000 chars each, they can be found in *./results/shakespeare/results.txt*. We also generated a huge file of 50000 chars, you can find it in *./results/shakespeare/PROUD TO BE.txt*. It is a almost full play, take a look at it, it's very funny.

Unfortunately we were not able to use tensorboard on the cluster so we can not provide any useful plots, but *./results/output-shakespeare.txt* shows the train loss and validation loss at each epoch.

4.2 Bible

I also trained my model with the Bible, since It was the first book big enough that comes in my mind. Starting with 01, this is the result:

```
^01And the Lord said unto Moses, Go into the land
   of Egypt the word
of the Lord, that thou shalt say unto them, The
   Lord shall be the Gideanite
of the Amorites, and the Amalekites.

^20And the Lord said unto Maccabeus, Thou shalt
   not be thy servant to
say, Art thou a man that is a present that is in
   the house, and hast
spoken this word to thy servants the king of
   Israel?

^11Then said Saul, The Lord hath set thee a sore
   and fourscore and two
years old, and he shall bear the sea%
```