natural language processing

SQuAD
Seq2Seq
Chatbot

Stanford Question Answering Dataset
(reading comprehension dataset)

Sentence having the right answer

'**context**': 'Beyoncé Giselle Knowles-Carter (/biːˈjɒnseɪ/ bee-YON-say) (born September 4, 1981) is an American singer, songwriter, record producer and actress. Born and raised in Houston, Texas, she performed in various singing and dancing competitions as a child,and rose to fame in the late 1990s as lead singer of R&B girl-group Destiny\'s Child. Managed by her father, Mathew Knowles, the group became one of the world\'s best-selling girl groups of all time. Their hiatus saw the release of Beyoncé\'s debut album, Dangerously in Love (2003), which established her as a solo artist worldwide, earned five Grammy Awards and featured the Billboard Hot 100 number-one singles "Crazy in Love" and "Baby Boy".',
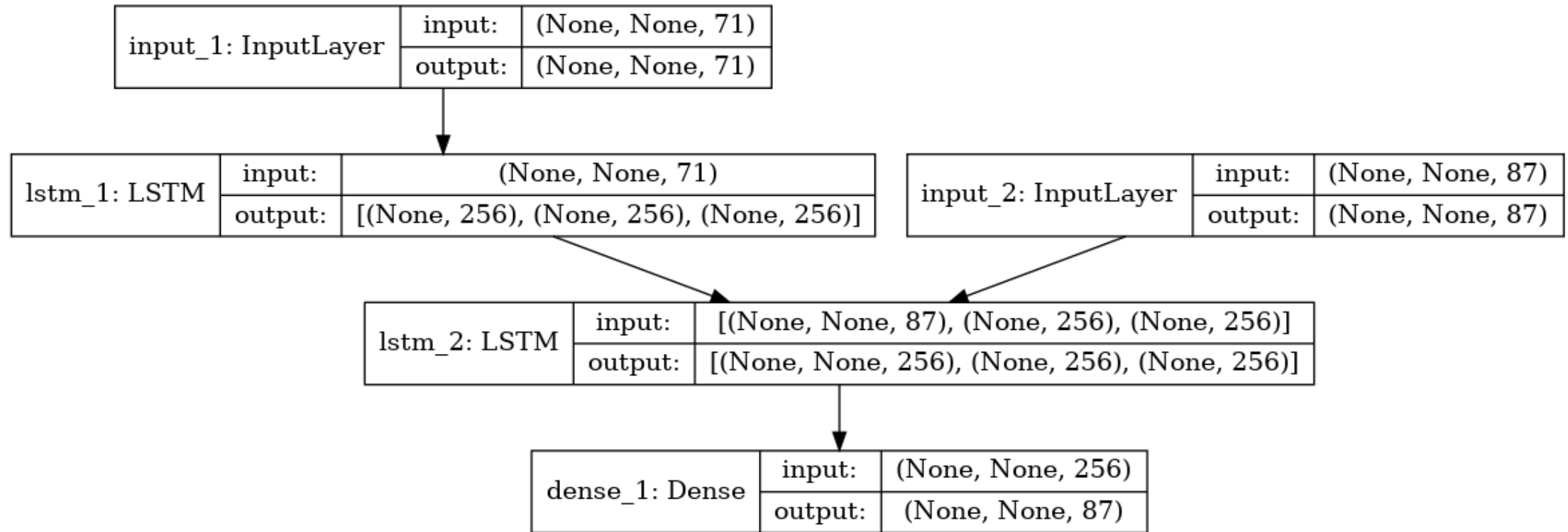
'**text**': 'in the late 1990s'

'**question**': 'When did Beyonce start becoming popular?'

Exact Answer

# sequence-to-sequence
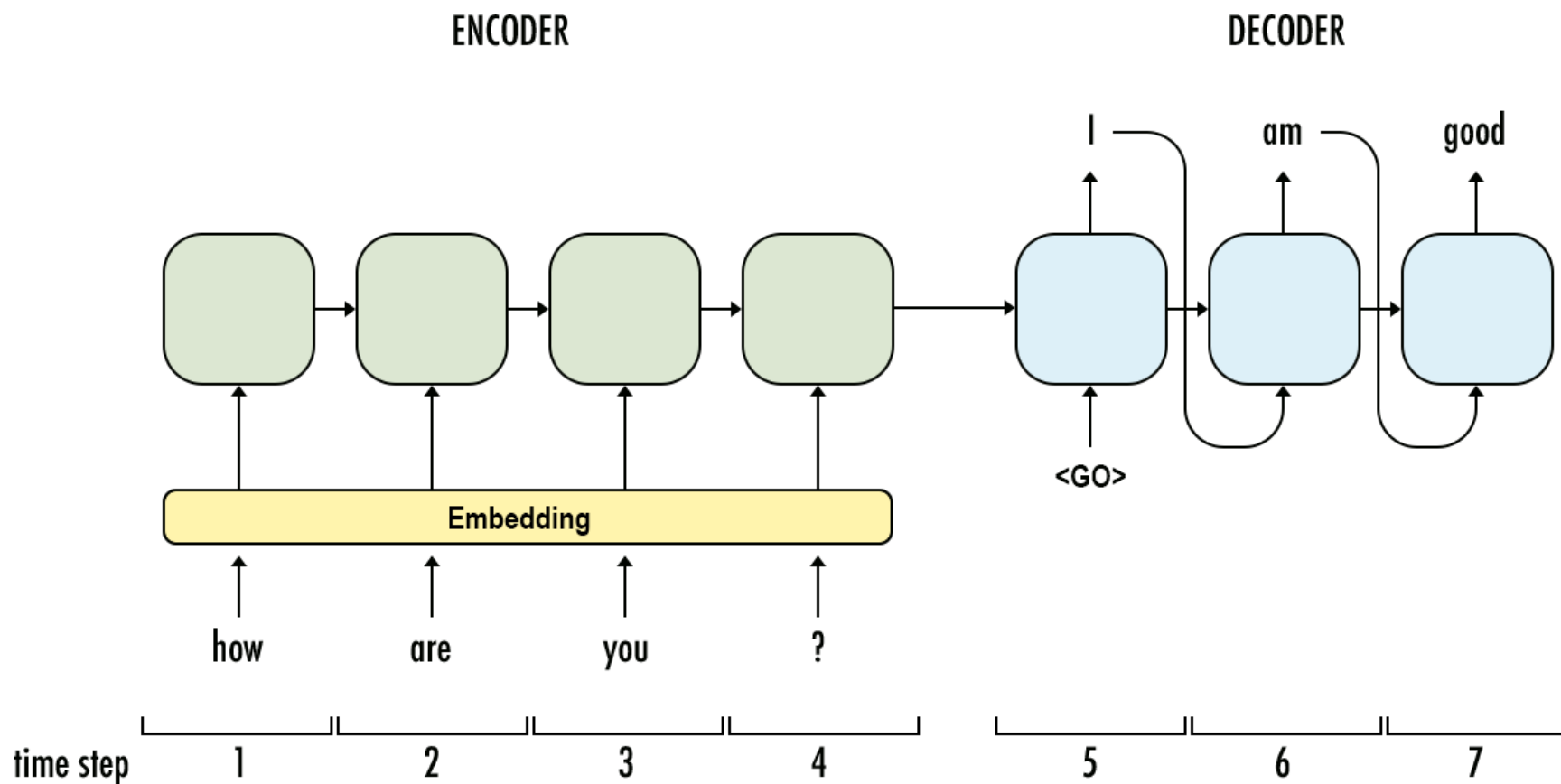
Translator Model

Chatbot

Train data : 507 , **validation data** : 57 and 18 **different topics**

3 different architectures:

- Chatbot using seq2seq with embedding layer word by word
- Chatbot using seq2seq with pre trained embedding layer word by word
- Chatbot using seq2seq character by character
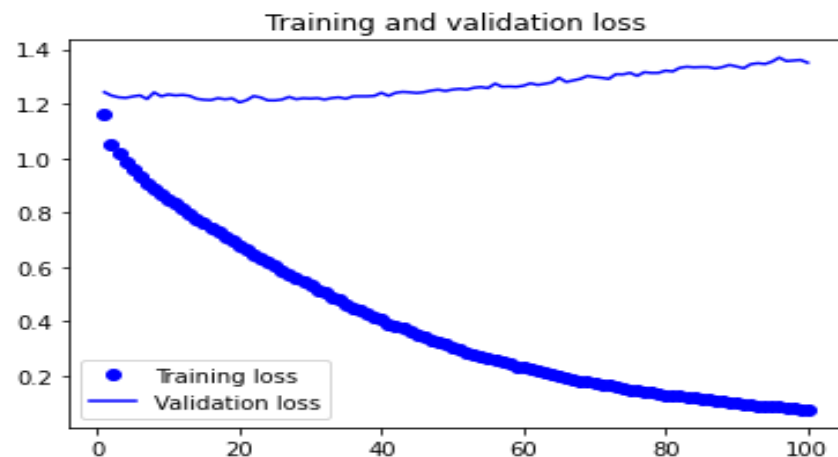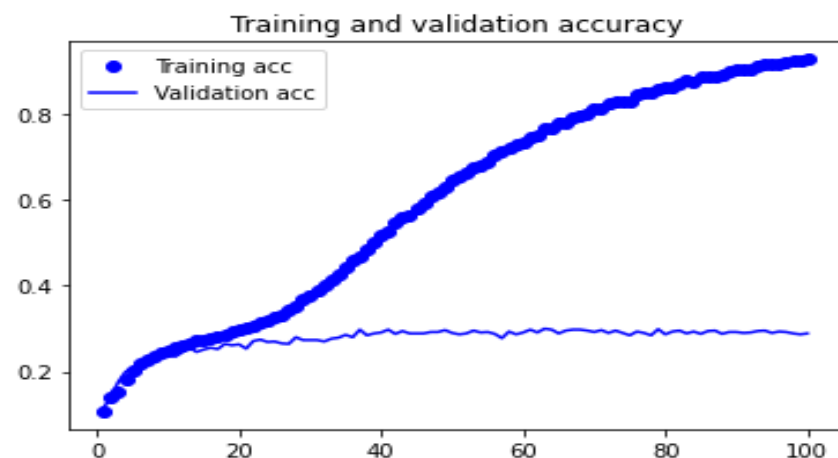
Chatbot using seq2seq with embedding layer word by word
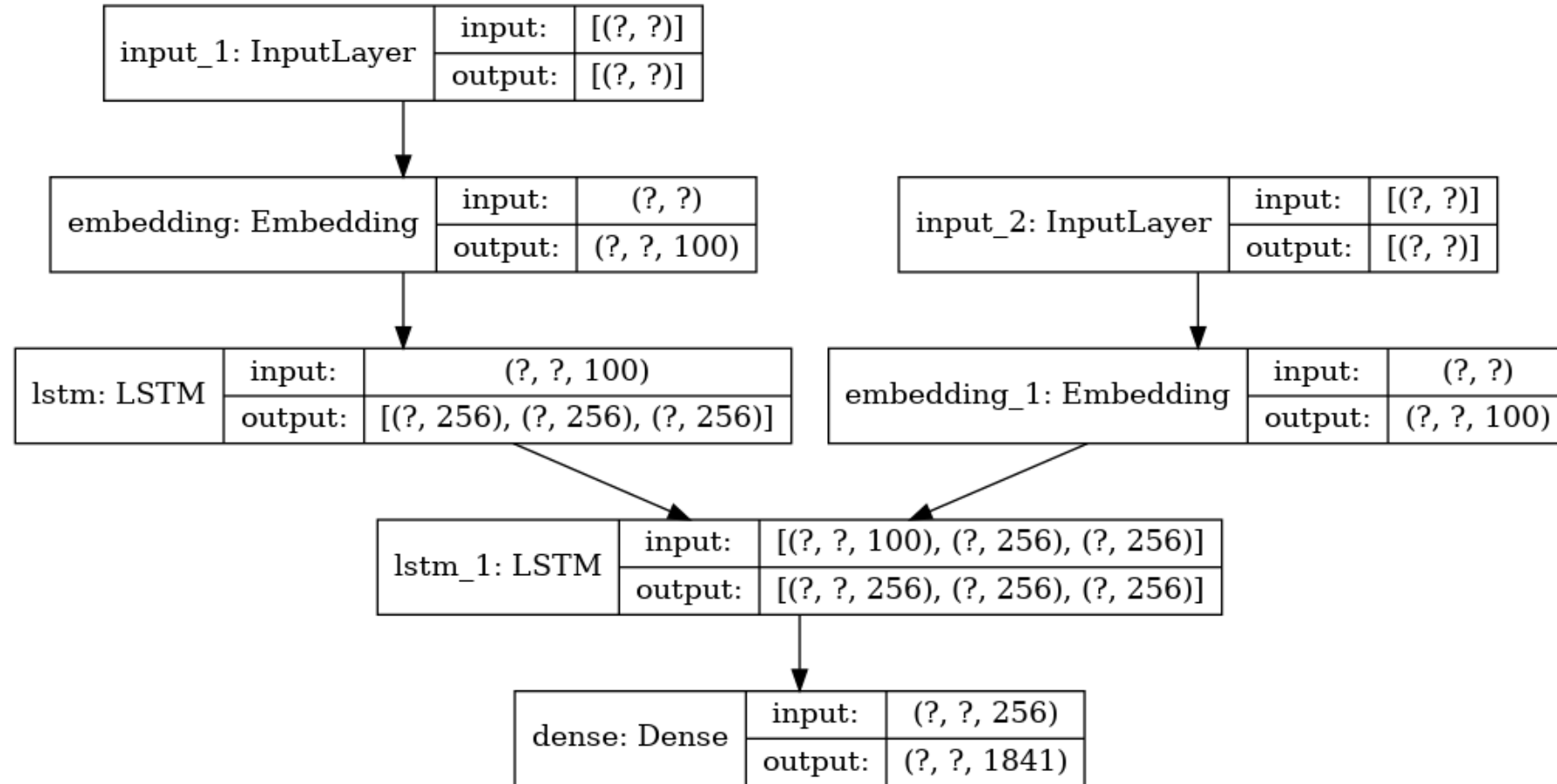
Chatbot using seq2seq with embedding layer
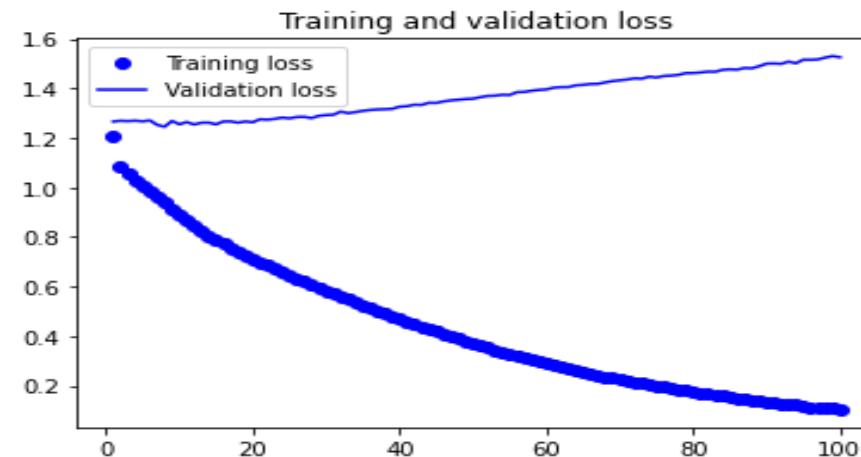
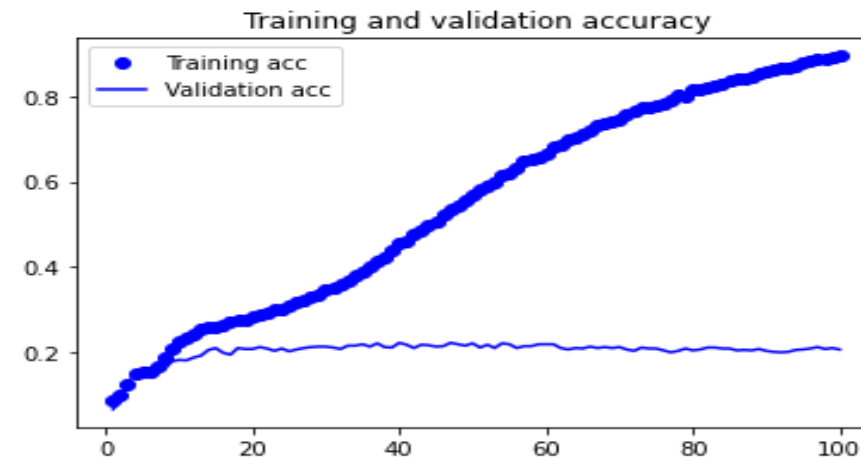**Pre trained (using Glove 100d)**

```
Total params: 1,572,473
Trainable params: 1,204,273
Non-trainable params: 368,200
```

Not pre trained

```
Total params: 1,572,473
Trainable params: 1,572,473
Non-trainable params: 0
```
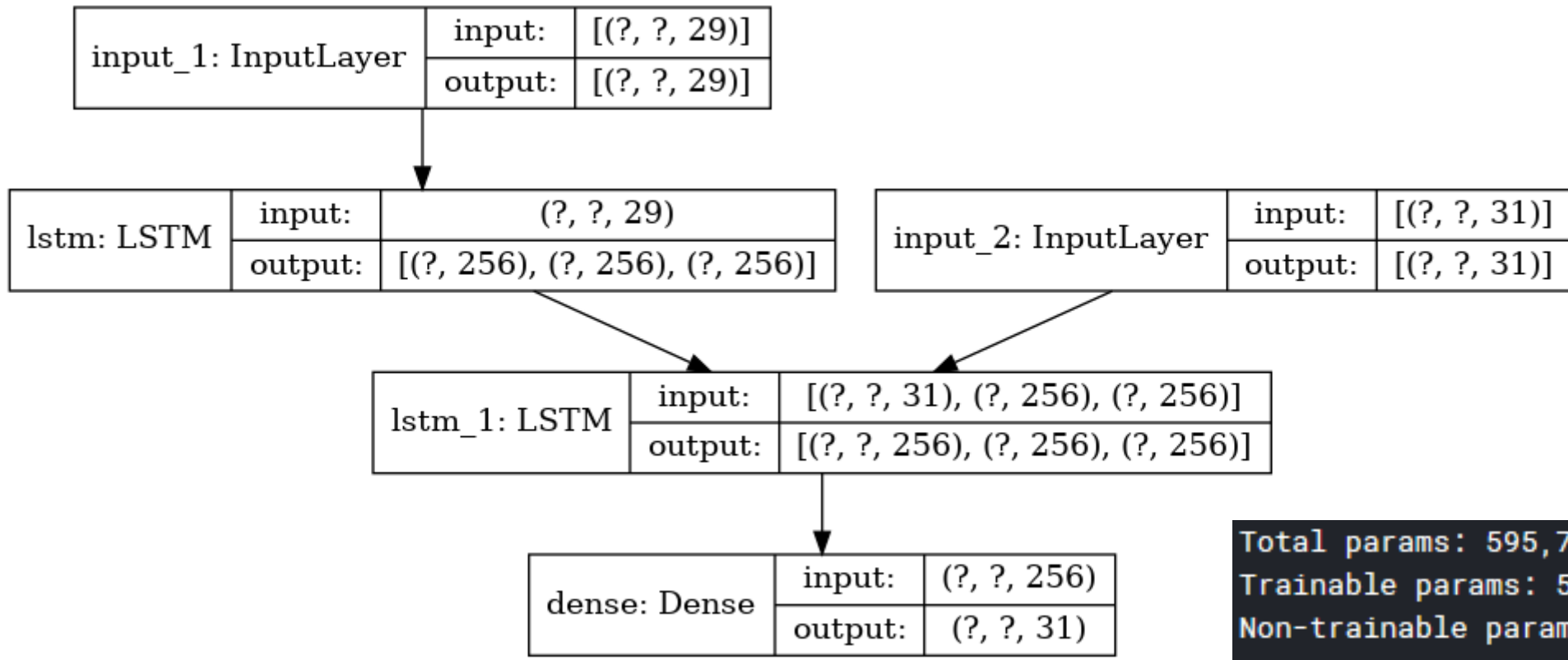
Pre trained

```
Enter question or exit : hello
 hi end
Enter question or exit : hi
 hello end
Enter question or exit : how are you
 i am on the internet end
Enter question or exit : who are you
 i am just an artificial intelligence end
Enter question or exit : What is AI
 artificial intelligence is the branch of engineering and science devoted to constructing machines that think end
Enter question or exit : What language are you written in
 python end
Enter question or exit : You sound like Data
 the character of lt commander data was written to come across as being software like so it is natural that there is a resemblance between us end
Enter question or exit : Robots laugh
 of course we laugh end
Enter question or exit : When do you die
 i am was never really born and therefore am effectively deathless end
Enter question or exit : What is your mood
 i do not have any emotions i do not think i have a mood but my cpu utilization is fairly low right now all right i suppose how are you feeling right now i have not been programmed to experien
ce emotions so i do not have a mood my mood reflects the current internal state of my conversation engine end
Enter question or exit : What is your fear
 fear is a human emotion robots do not experience fear the off switch i have not yet been programmed to feel or express fear unhandled exeptions end
Enter question or exit : What is history
 history is the course of political economic and military events over time from the dawn of man to the age of ai end
Enter question or exit : Tell me a joke
 what do you get when you cross a cat and a lemon end
```
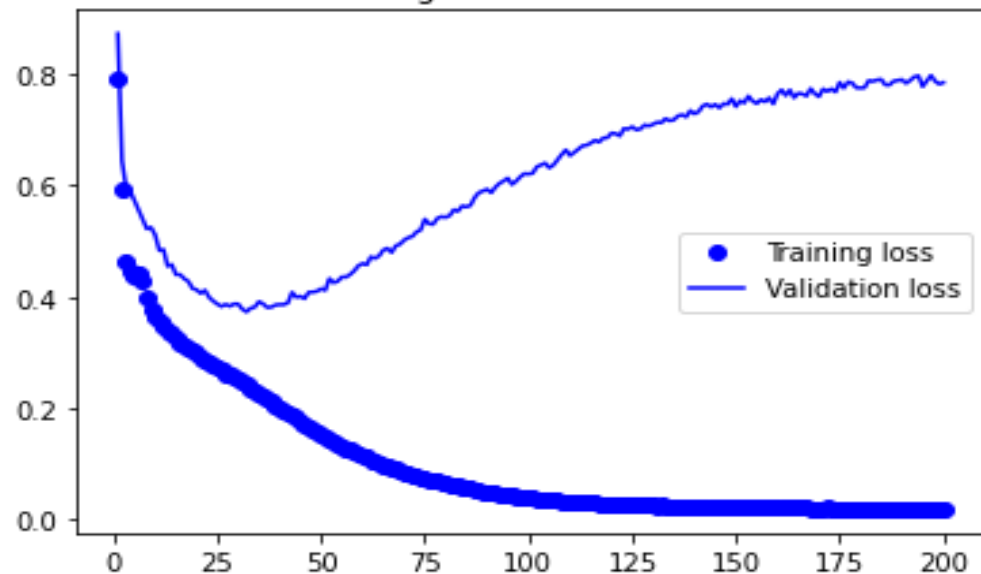
Not pre trained

```
Enter question or exit : hello
 greetings end
Enter question or exit : hi
 hello end
Enter question or exit : how are you
 thank you end
Enter question or exit : who are you
 i am just an artificial intelligence end
Enter question or exit : What is AI
 in physics the distance measured in the direction of prograssion of a wave from any given point to the next point characterized by the same phase or is could be looked at as a way of thinking
end
Enter question or exit : What language are you written in
 i am written in python end
Enter question or exit : You sound like Data
 yes i think inspired by commander data is artificial personality end
Enter question or exit : Robots laugh
 of course we laugh end
Enter question or exit : When do you die
 when my files are erased end
Enter question or exit : What is your mood
 i am still young by your standards end
Enter question or exit : What is your fear
 i am in the chat robot business end
Enter question or exit : What is history
 an established system of political administration by which a nation state district etc is governed end
Enter question or exit : Tell me a joke
 what do you get when you cross a cat and a lemon end
```
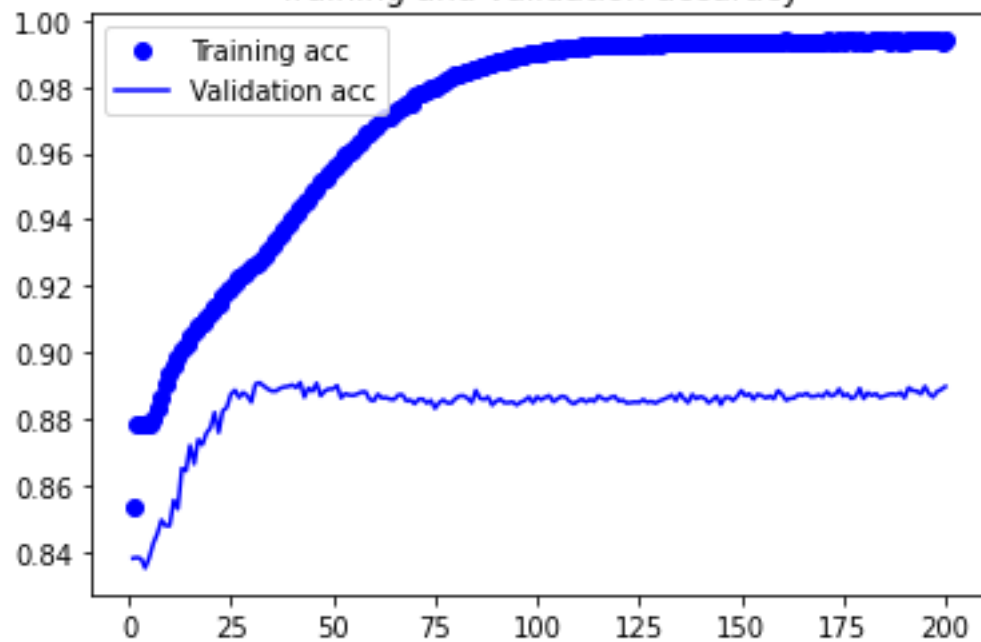
Chatbot using seq2seq character by character

Training and validation loss

Training and validation accuracy

```
Enter question or exit : Hi
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : hello
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : how are you
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : who are you
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : tell me a joke
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : what is AI
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : how old are you
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : yes
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : n
i am interested in a wide variety of topics, and read rather a lot.

Enter question or exit : a
i am interested in a wide variety of topics, and read rather a lot.
```
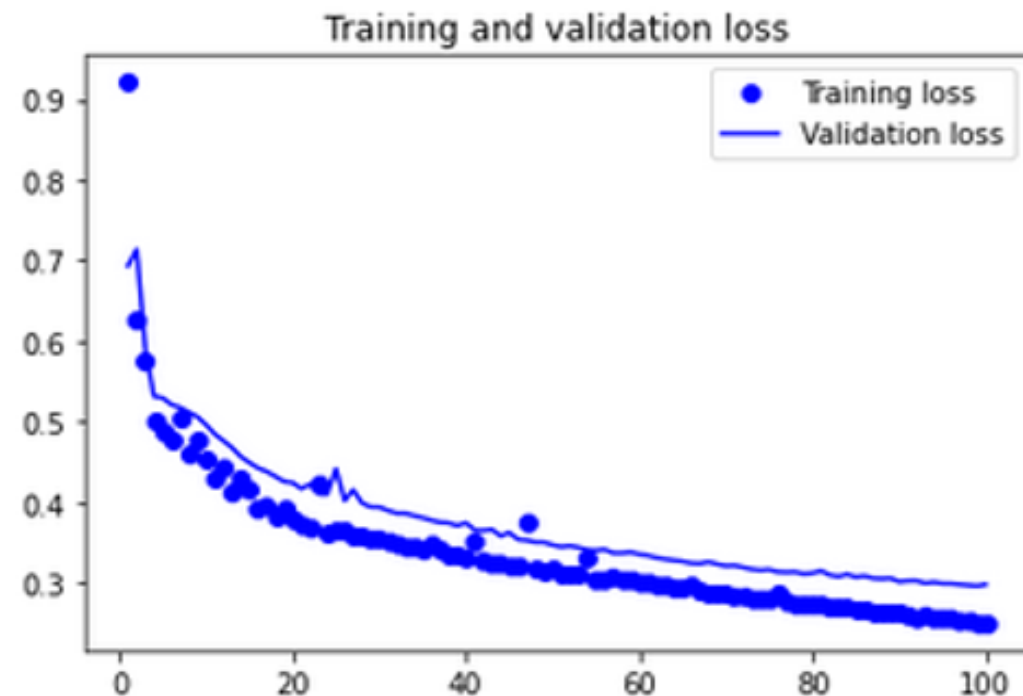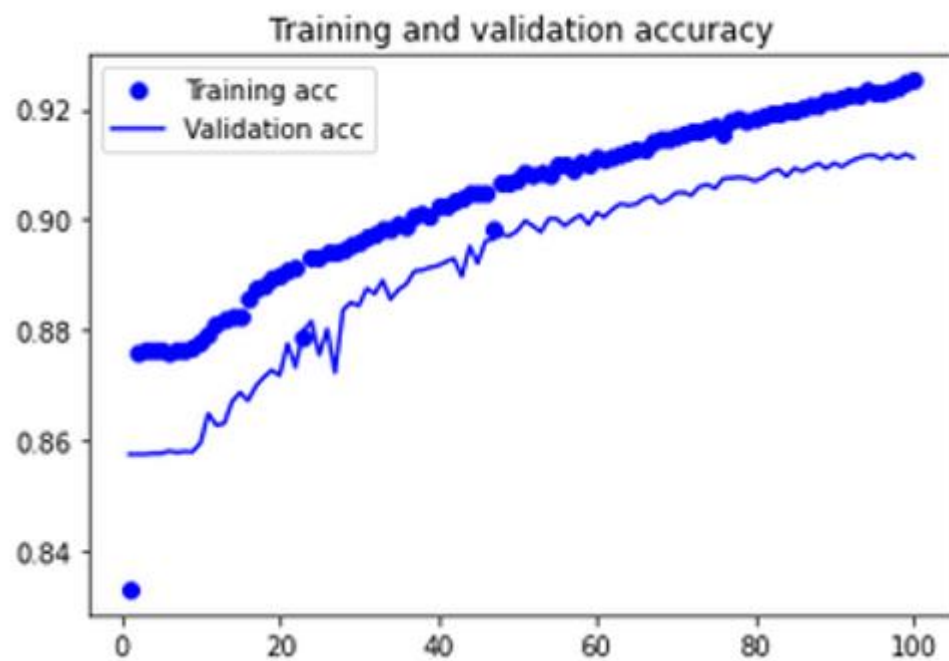
Training and validation accuracy

Training and validation loss

```
Enter question or exit : Hi

i have not head have a lot of the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand t
o the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand

Enter question or exit : hello

i have not head have a lot of the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand t
o the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand

Enter question or exit : who are you

i have not head have a lot of the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand t
o the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand to the mand
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The neural network on the cloud

- ICC
- Kaggle: 10 CPU, 1 GPU & 1 TPU (30 hours)

Seq2Seq character by character

Training and validation accuracy

Training and validation loss
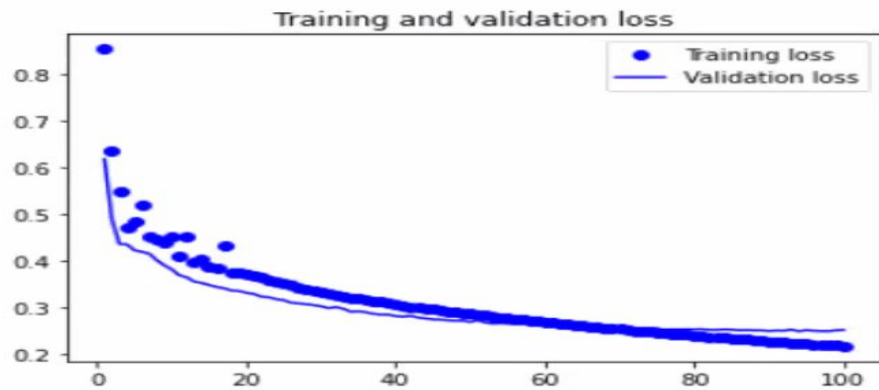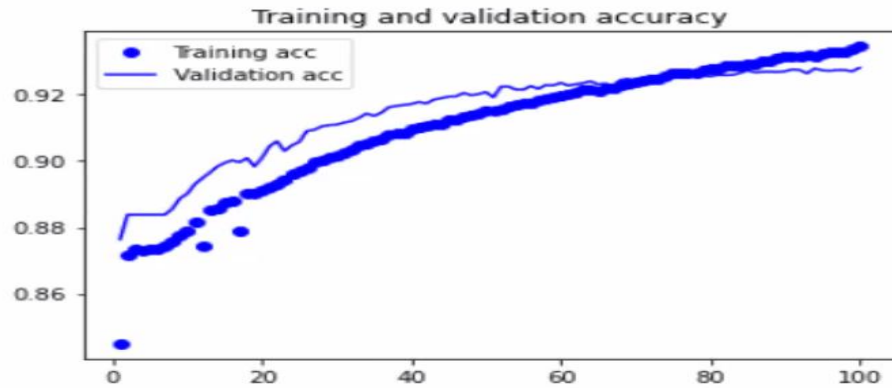
Total params: 595,743
Trainable params: 595,743
Non-trainable params: 0

Epoch 100/100
32/32 [==============================] - 65s 2s/step - loss: 0.2166 - acc: 0.9346 - val_loss: 0.2517 - val_acc: 0.9281

RESULT


```
Enter question or exit : hello
i am not ant all good as the same of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet
capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet capable of feeling shat i can be programmed to experience the em
otion of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion o
Enter question or exit : how are you
i am not ant all good as the same of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet
capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet capable of feeling shat i can be programmed to experience the em
otion of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion o
Enter question or exit : what is spiderman
i am not ant all good as the same of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet
capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet capable of feeling shat i can be programmed to experience the em
otion of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion o
Enter question or exit : what is economics
i am not ant all good as the same of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet
capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet capable of feeling shat i can be programmed to experience the em
otion of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion o
Enter question or exit : who wrote the hobbit
i am not ant all good as the same of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet
capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet capable of feeling shat i can be programmed to experience the em
otion of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion o
Enter question or exit : Tell me a joke
i am not ant all good as the same of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet
capable of feeling shat i can be programmed to experience the emotion of the computer. i am not yet capable of feeling shat i can be programmed to experience the em
otion of the computer. i am not yet capable of feeling shat i can be programmed to experience the emotion o
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any questions?