AIMS

African Master’s in Machine Intelligence

**Deep NLP Part III – Machine Reading, Question Answering and Dialog**

Final Exam

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1. The exam is 2 hours long (but was originally intended for 1h30, you can hand it in early).
2. Write clearly! If an instructor cannot understand your answer, it is not an answer.
3. Send your exam to both [angelafan@fb.com](mailto:angelafan@fb.com) and [louismartin@fb.com](mailto:louismartin@fb.com).

**Distribution of Marks**

|  |  |  |
| --- | --- | --- |
| **Section** | **Points** | **Score** |
| 1. Machine Reading | 25 |  |
| 2. Open domain Question Answering | 25 |  |
| 3. Dialog (Bonus) | 5 |  |
| **Total** | 55 |  |

**Machine Reading (25 points)**

1. Give three reasons why artificial data is useful for Machine Reading? (3 points)
2. Give three limitations of artificial data? (3 points)
3. Give an example of a Winograd Schema (3 points)
4. How is answer predicted in the bAbI dataset? Which training loss can used for training on it? (3 points)
5. How is an answer predicted in the SQuAD dataset? Which training loss can used for training on it? (3 points)
6. What does the acronym BiLSTM stand for? (1 point)
7. Give three reasons why pretrained contextualized word embeddings (ELMo/BERT) work so well. (3 points)
8. Give three current challenges of Machine Reading systems (3 points)
9. What is the task of coreference resolution? (3 points)

**Open domain Question Answering (25 points)**

BestPhoneEver.com is a successful phone company that sells a lot of mobile phones. However, those phones have issues regularly and BestPhoneEver.com receives so many calls that their customer service cannot answer all of them conveniently. They hire you to build a question answering system to help the customer service agents to answer more quickly.

You have access to:

* a collection of 10k questions and their answers given by the customer service in the past
* a database that groups all the data on each phone and plan sold by the company
* a set of 5k documents that describe multiple bugs that occurred to all recent phones in the last couple of years

Describe the system that you would propose. Think at how it is conceived, which data is used, how the system is evaluated, etc.

**Dialog (bonus 5pts)**

1. What are the main differences between a goal-oriented and a chit-chat dialog system? (2 points)
2. What typical characteristics of dialog make it difficult to train models from data and evaluate them? (3 points)