CS 224N: Assignment 3

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Problem 1. A window into NER (30 points)

1.1 (a) Understanding NER (5 points, written)

1.1.1 i) Ambiguous Examples (2 points)

Answer:

1.1.2 ii) Why use features (1 point)

Answer:

1.1.3 iii) Describe the features (2 points)

Answer:

1.2 (b) Computational complexity (5 points, written)

1.2.1 i) Dimensions (2 points)

Answer:

1.2.2 ii) Complexity (3 point)

Answer:

1.3 (c) Implement model(15 points, code)

Problem 2. Recurrent neural nets for NER (40 points)

2.1 (a) Computational complexity (4 points, written)

2.1.1 i) How many more (1 point)
Answer:

2.1.2 ii) Complexity (3 point)
Answer:

2.2 (b) F_1 score (2 points, written)

2.2.1 i) When CE cost and F_1 decreasing at same time (1 point)
Answer:

2.2.2 ii) Why not F_1 (1 point)
Answer:

2.3 (c) RNN cell (5 points, code)

2.4 (d) RNN model (8 points, code/written)

2.4.1 i) Loss and Gradient Update (3 points, written)
Answer:

2.4.2 ii) (5 points, code)

2.5 (e) More RNN model (12 points, code)

2.6 (e) Train RNN model (3 points, code)

Problem 3. Grooving with GRUs (30 points)

3.1 (a) Modeling latching behavior (4 points, written)

3.1.1 i) RNN cell values (1 point)

Answer:

3.1.2 ii) GRU cell values (3 points)

Answer:

3.2 (b) Modeling toggling behavior (6 points, written)

3.2.1 i) 1D RNN (3 points)

Answer:

3.2.2 ii) GRU cell values (3 points)

Answer:

3.3 (c) GRU cell (6 points, code)

3.4 (d) Learn dynamics (6 points, code)

3.5 (e) Analyze graphs (5 points, written)

Answer:

3.6 (f) Train GRU (3 points, code)