Deep Learning
Assignment -2
Named Entity Recognition

Report

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Model hyperparameters:

For all of our models, we have used the same hyperparameters for simplicity.

```
SEQ_LEN = 30
(Maximum allowable length of the list of words from the sentence)
```

Model for English Language (fine grain):
- `EMBEDDING_DIM = 200`
- `HIDDEN_DIM   = 200`
- `NUM_EPOCHS   = 10`
- `BATCH_SIZE   = 10`

Model for English Language (coarse grain):
- `EMBEDDING_DIM = 200`
- `HIDDEN_DIM   = 200`
- `NUM_EPOCHS   = 10`
- `BATCH_SIZE   = 10`

Model for Hindi Language (fine grain):
- `EMBEDDING_DIM = 125`
- `HIDDEN_DIM   = 125`
- `NUM_EPOCHS   = 10`
- `BATCH_SIZE   = 10`

Model for Hindi Language (coarse grain):
- `EMBEDDING_DIM = 125`
- `HIDDEN_DIM   = 125`
- `NUM_EPOCHS   = 10`
- `BATCH_SIZE   = 10`

Model for Bangla Language (fine grain):
- `EMBEDDING_DIM = 125`
- `HIDDEN_DIM   = 125`
- `NUM_EPOCHS   = 10`
- `BATCH_SIZE   = 10`

Model for Bangla Language (coarse grain):
- `EMBEDDING_DIM = 125`

- HIDDEN_DIM   = 125
- NUM_EPOCHS   = 10
- BATCH_SIZE   = 10

Performance:

Model for English Language (fine grain):

```
  | Name      | Type             | Params
-------------------------------------------------
0 | embedding | Embedding        | 48.4 M
1 | lstm      | LSTM             | 643 K
2 | fc        | Linear           | 27.3 K
3 | loss_fn   | CrossEntropyLoss | 0
-------------------------------------------------
```

- Test_loss : 0.4338398873806
- f1-scores
    - Accuracy   : 0.92
    - macro avg   : 0.36
    - weighted avg: 0.92

Model for English Language (coarse grain):

```
  | Name      | Type             | Params
-------------------------------------------------
0 | embedding | Embedding        | 48.4 M
1 | lstm      | LSTM             | 643 K
2 | fc        | Linear           | 5.6 K
3 | loss_fn   | CrossEntropyLoss | 0
-------------------------------------------------
```

- Test_loss : 0.30375123023986816
- f1-scores
    - Accuracy   : 0.94
    - macro avg   : 0.57
    - weighted avg: 0.94

Model for Hindi Language (fine grain):

```
  | Name      | Type             | Params
-------------------------------------------------
0 | embedding | Embedding        | 3.8 M
1 | lstm      | LSTM             | 252 K
```

```
2 | fc        | Linear           | 17.1 K
3 | loss_fn   | CrossEntropyLoss | 0
--------------------------------------------------
```

- Test_loss : 0.2674734592437744
- f1-scores
  - Accuracy   : 0.96
  - macro avg   : 0.59
  - weighted avg: 0.95

Model for Hindi Language (coarse grain):

```
  | Name      | Type             | Params
--------------------------------------------------
0 | embedding | Embedding        | 3.8 M
1 | lstm      | LSTM             | 252 K
2 | fc        | Linear           | 3.5 K
3 | loss_fn   | CrossEntropyLoss | 0
--------------------------------------------------
```

- Test_loss : 0.21236324310302734
- f1-scores
  - Accuracy   : 0.96
  - macro avg   : 0.72
  - weighted avg: 0.96

Model for Bangla Language (fine grain):

```
  | Name      | Type             | Params
--------------------------------------------------
0 | embedding | Embedding        | 5.3 M
1 | lstm      | LSTM             | 252 K
2 | fc        | Linear           | 17.1 K
3 | loss_fn   | CrossEntropyLoss | 0
--------------------------------------------------
```

- Test_loss : 0.2563086748123169
- f1-scores
  - Accuracy   : 0.96
  - macro avg   : 0.57
  - weighted avg: 0.95

Model for Bangla Language (coarse grain):

```
  | Name      | Type             | Params
--------------------------------------------------
```

```
0 | embedding | Embedding        | 5.3 M
1 | lstm      | LSTM             | 252 K
2 | fc        | Linear           | 3.5 K
3 | loss_fn   | CrossEntropyLoss | 0
------------------------------------------------
```

- Test_loss : 0.19302119314670563
- f1-scores
    - Accuracy   : 0.96
    - macro avg   : 0.72
    - weighted avg: 0.96

Links for model files:

https://drive.google.com/file/d/1QArjbPRgPj7N5TeLJFr-fo6HGnapLyf9/view?usp=share_link → Bangla Coarse

https://drive.google.com/file/d/1TE0f7t3EjPLsRqzJV3vRBAMQ4V-4K_q9/view?usp=share_link → Bangla Fine

https://drive.google.com/file/d/1RS1EgQZcD8yqPJjzoZ3oVqcCiXoa-qh9/view?usp=share_link → English Coarse

https://drive.google.com/file/d/1Yucgw2ZRxc46n0dIG2c6dG_hY7xLlJDb/view?usp=share_link → English Fine

https://drive.google.com/file/d/1L5Q3ou_v56gPBsSdqt9GqWjLaoyAsbJd/view?usp=share_link → Hindi Coarse

https://drive.google.com/file/d/1FVMfrQzN7dMgbGIKMDZBCbBaJFNqjOYj/view?usp=share_link → Hindi Fine

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