**Part 1 answers**

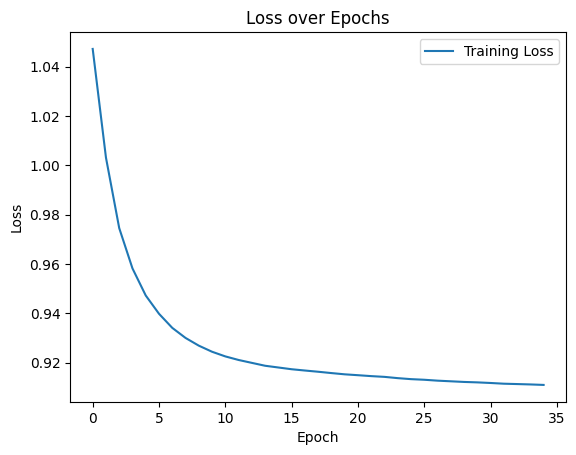
Roee esquire, ID 309840791

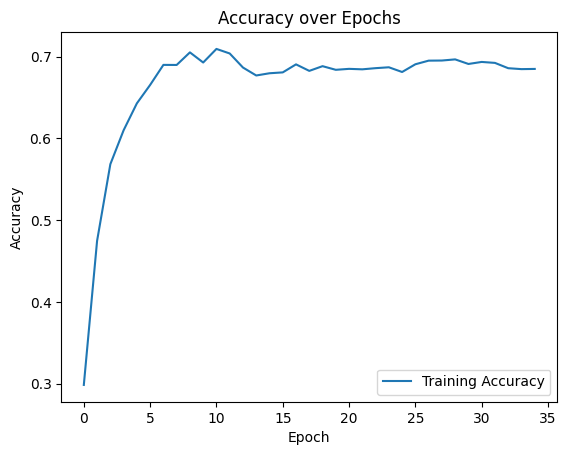
Yedidia Kfir, ID

In this part we used MLP with one hidden layer as requested.

NER:

The best parameters found were hidden dimension 40 and 0.001 learning rate. This yielded 0.709 accuracy rate on dev set. See accuracy and loss function with hidden dimension 40:





See in the end of page the results of using hidden dimension 20 and 60.

Regarding the considerations mentioned. For a word that is found in test/dev but is no found in train set, we allocated a randomly initialized vector for the unknown word. In this way we are using the learned embeddings of the surrounding words.

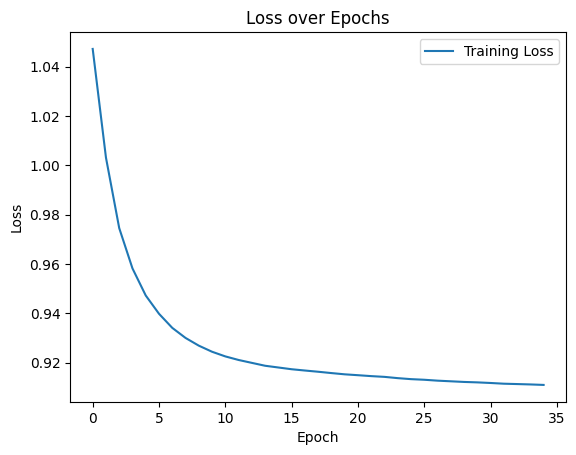
Flow

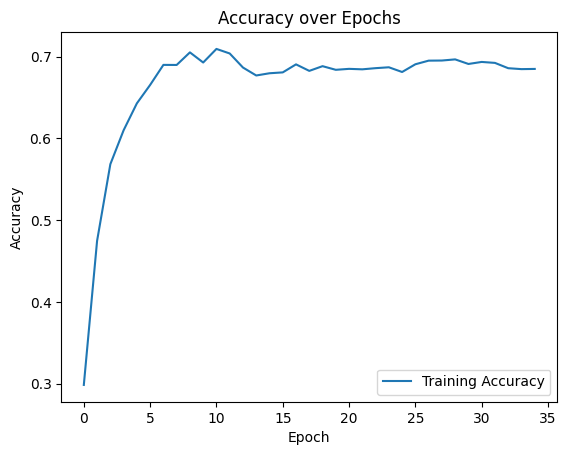
1. Fix seed to 42
2. Create labeled train data
3. Generate vocabulary – train words and two preceeding words, and two following words for end of sequence
4. Construct computation graph according to the specifications
5. Train
   1. Between each train iteration check dev accuracy, calculated according to the specifications
   2. With word that is in train data but not dev data –
      1. Give majority label - Naïve
      2. Randomly initialized vector – uses learned embeddings
      3. Search for same windows in train data and takes majority label – some or all sub combinations in 4 window (prior two, prior 1, following 1, following 2, prior two and following 1, all 4 and so on) – most complex but probably works good.

﻿Experiment with several network configurations, learning rates. Generate the graphs requested.

NER Hidden dim 40

Accuracy peaked in epoch 10 with Accuracy: 0.7095618345618345

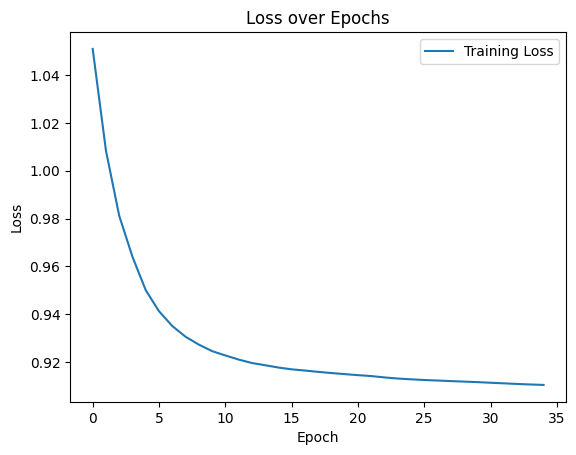


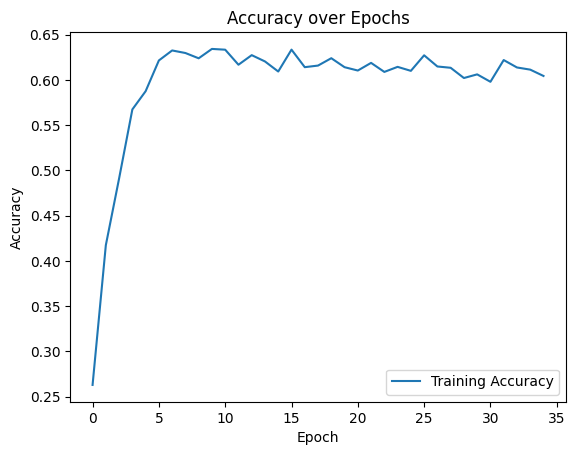


**Task 1 – ner**

Hidden dim 20

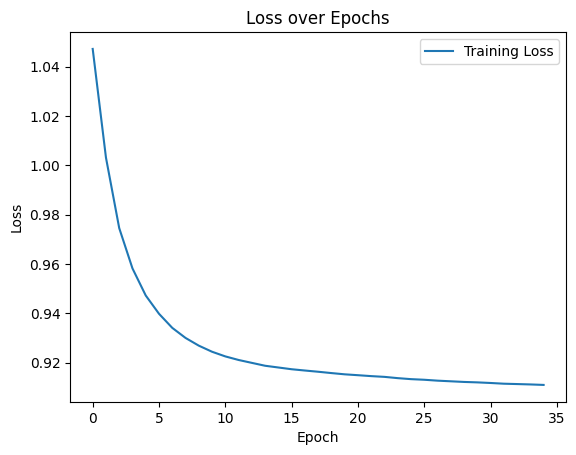
Accuracy peaked in epoch 9 with Accuracy: 0.6343071616960844

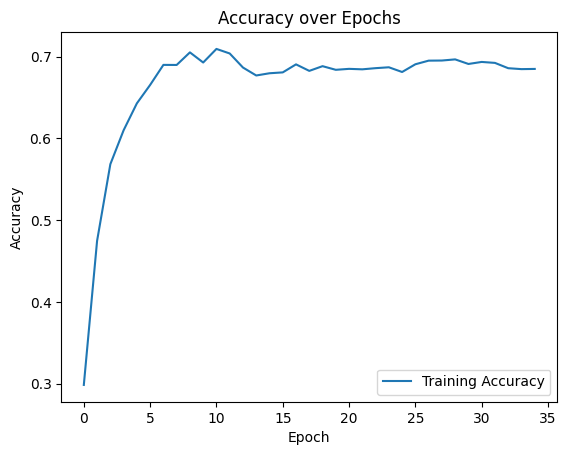




Hidden dim 40

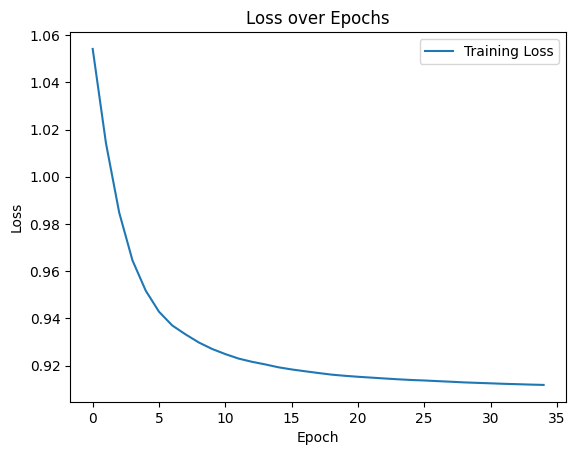
Accuracy peaked in epoch 10 with Accuracy: 0.7095618345618345

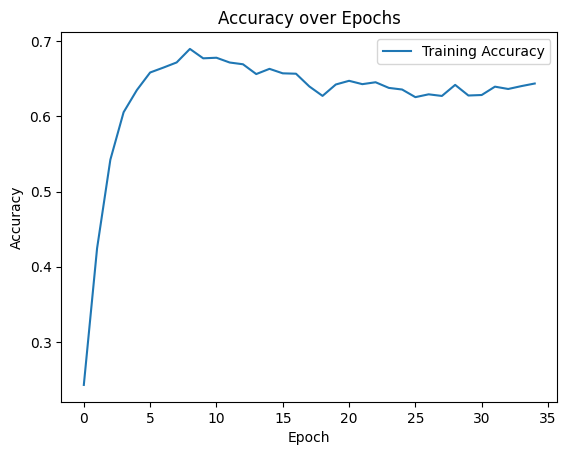




Hidden dim 60

Accuracy peaked in epoch 8 with Accuracy: 0.6895493970806008

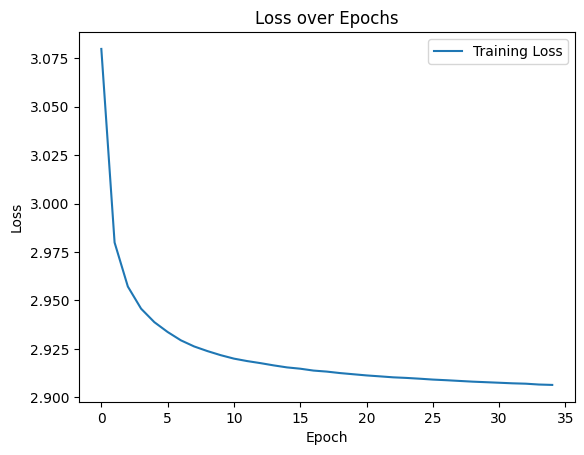


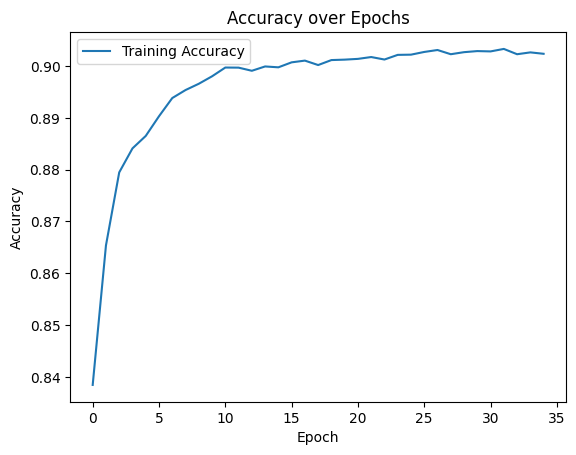


TASK 1 – POS

Hidden dim 20

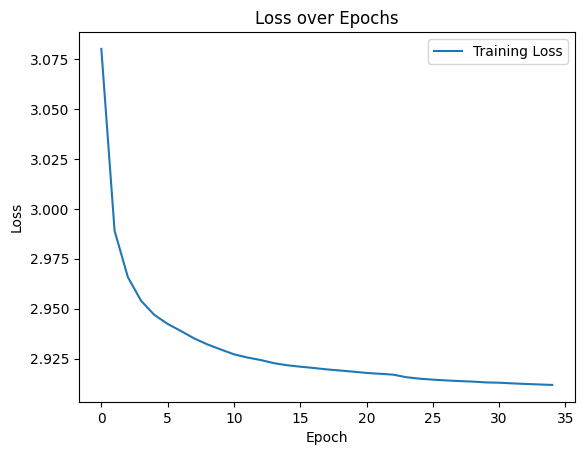
Accuracy peak epoch 31 Accuracy: 0.9032972081271273

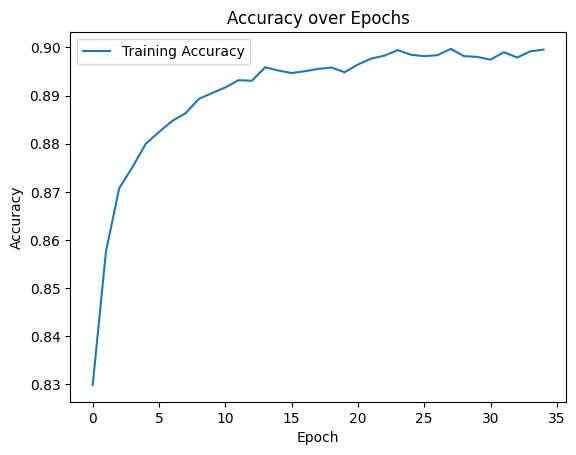




Hidden dim 40

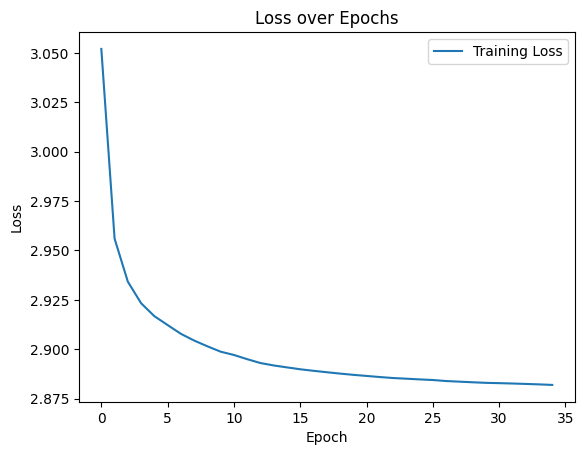
Accuracy peak epoch 27 Accuracy: 0.8996846875065255

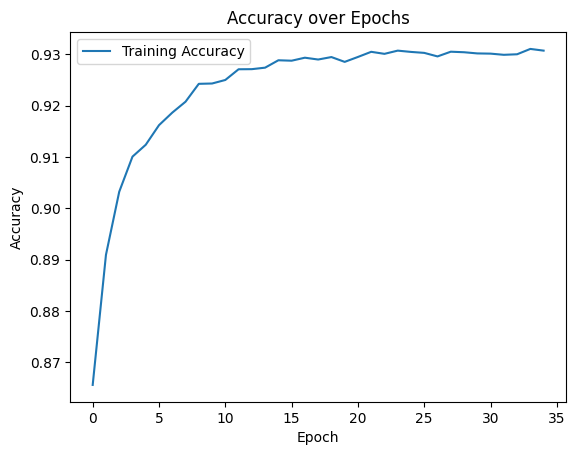




Hidden dim 60

Accuracy peak epoch 33 accuracy 0.931069765499384





Task 2

POS

Hidden dim 20

Accuracy peak in epoch

Hidden dim 40

Accuracy peak in epoch

Hidden dim 60

Accuracy peak in epoch