Assignment 3

Due: 3/26

1. Trace the operation of a Viterbi decoder of name tagging (consider it as a special type of POS tagging) for the following sentence:

   *Putin met Bush in Washington (3pt)*

2. Grammar L1 is given as follows:

   Grammar:

   
   \[
   S \rightarrow \text{NP VP}
   \]
   
   \[
   S \rightarrow \text{Aux NP VP}
   \]
   
   \[
   S \rightarrow \text{VP}
   \]
   
   \[
   \text{NP} \rightarrow \text{Pronoun}
   \]
   
   \[
   \text{NP} \rightarrow \text{Proper-Noun}
   \]
   
   \[
   \text{NP} \rightarrow \text{Det Nominal}
   \]
   
   \[
   \text{Nominal} \rightarrow \text{Noun}
   \]
   
   \[
   \text{Nominal} \rightarrow \text{Nominal Noun}
   \]
Nominal → Nominal PP  
VP → Verb  
VP → Verb NP  
VP → Verb NP PP  
VP → Verb PP  
VP → VP PP  
PP → Preposition NP  

Lexicon:

Det → that | this | a  
Noun → book | flight | meal | money  
Verb → saw | book  
Pronoun → I | she | me  
Proper-Noun → New York  
Aux → does  
Preposition → with | at  

(1) Create a new grammar L2 based on L1 and expand the lexical entries so that you can parse the following sentence (2pt):

The spy saw the cop with the telescope.

(2) Show the parsing procedure for this procedure using bottom-up CKY parsing algorithm (3pt).

(3) Show the unlabeled dependency relations for the sentence, and label the semantic roles for each predicate. (1pt).