Assignment 2

Due: October 4

1. (5pt) Draw Abstract Meaning Representation (AMR) Graphs for the following two sentences:

(1) (2pt) **I was in Guatemala when the CIA was preparing its attack on President Arbenz of Guatemala, 1954.**

(2) (3pt) **Pappy Bush, who was the president at the time, claimed that he had won the cold war since the collapse of the Soviet Union happened on his watch.**

2. (5pt, 0.5pt each for undergraduates; graduates skip this problem 2 and jumps to 3) Answer the following questions:

(1) Consider the following word pairs:

flower:tulip

emotion:rage

poem:sonnet

What relation best describes these X:Y word pairs?

[ ] to X is to have a Y receive some object/service/idea

[ ] Y is an unacceptable form of X

[ ] a Y is a part of an X

[ ] Y is a kind/type/instance of X

(2) Consider the following word pairs:

water:drop

mile:yard

time:moment

What relation best describes these X:Y word pairs?

[ ] an X is an increase/decease in Y

[ ]an Y receives an X

[ ]an X is a defect in Y

[ ]X may be divided into Y

(3) Consider the following word pairs:

millionaire:money

author:copyright

robin:nest

What relation best describes these X:Y word pairs?

[ ]X causes/compels a person to Y

[ ]X is intended to produce Y

[ ]an X cannot have attribute Y; Y is antithetical to being X

[ ]X possesses/owns/has Y

(4) Consider the following word pairs:

car:auto

buy:purchase

rapid:quick

What relation best describes these X:Y word pairs?

[ ] Y is an instrument through with X receives some object/service/role

[ ]an X and Y are a similar type of action/thing/attribute

[ ]someone perform the action X on Y

[ ]someone/something who is X is unlikely to Y

(5) Consider the following word pairs:

eating:gluttony

concerned:obsessed

bleeding:hemorrhage

What relation best describes these X:Y word pairs?

[ ] Being X is incompatible with being Y

[ ] X is made of / is comprised of Y

[ ] someone/something will X in order to Y

[ ] Y is an excessive form of X

(6) Consider the following word pairs:

attack:defend

buy:sell

love:hate

What relation best describes these X:Y word pairs?

[ ] X is the reverse act of Y / X may be undone by Y

[ ] X is an expression that indicates Y

[ ] a Y represents/is representative of X

[ ] Y describes a condition or state that is usually absent from X

(7) Consider the following word pairs:

contentious:conflict

taciturn:silence

celibate:abstinence

What relation best describes these X:Y word pairs?

[ ] a person who is X often is in a state of Y

[ ] X is an expression that indicates Y

[ ] X is a time when Y occurs

[ ] X will become / be converted into Y

(8) Consider the following word pairs:

rain:wet

riddle:holes

homogenize:uniform

What relation best describes these X:Y word pairs?

[ ]the action X results Y or things that are Y

[ ]a Y represents/is representative of X

[ ]X and Y are contrary / opposite to each other

[ ]a Y is one item in a collection/group of X

(9) Consider the following word pairs:

tailor:suit

oracle:prophesy

baker:flour

What relation best describes these X:Y word pairs?

[ ] something that is X cannot be Y

[ ] an X makes Y / an X uses Y to make an item

[ ] X is intended to produce Y

[ ] X enables the use of Y

(10) Consider the following word pairs:

siren:danger

scepter:authority

signature:approval

What relation best describes these X:Y word pairs?

[ ] an X is a place/location/area where Y takes place

[ ] an X indicates/signifies Y

[ ] an X will typically Y

[ ] someone/something who is X cannot be Y or be in the state of Y

3. (5 extra pts for undergraduates, 5pts for graduates) Write a program based on word embeddings to answer questions in 2 automatically, by providing evidence by showing the relation type is similar to known pairs. For example, in order to prove that the relation between “banana” and “fruit” should be “is-a”, you can show the word vector representation for this relation is similar to the relation between “tiger” and “animal”, or between “queen” and “woman”.

Resources: trained Word2Vec model:

    C: [https://code.google.com/archive/p/word2vec/](https://exchange.rpi.edu/owa/redir.aspx?REF=1s2nYupIbLsdtUmkouyuTm0ynjYWWHFmwvzV_7AxvFoMjUl2AuHTCAFodHRwczovL2NvZGUuZ29vZ2xlLmNvbS9hcmNoaXZlL3Avd29yZDJ2ZWMv)  
  Java: [http://deeplearning4j.org/word2vec.html](https://exchange.rpi.edu/owa/redir.aspx?REF=2hwsE1PXiB3RXpm9haUJS3iABWevfKG-l3CNJDtE4xgMjUl2AuHTCAFodHRwOi8vZGVlcGxlYXJuaW5nNGoub3JnL3dvcmQydmVjLmh0bWw.)  
   Python: [http://radimrehurek.com/gensim/models/word2vec.html](https://exchange.rpi.edu/owa/redir.aspx?REF=aSAvXLyugVZMiD9yKzrELbYDAq88LXiC8H7e2W457lEMjUl2AuHTCAFodHRwOi8vcmFkaW1yZWh1cmVrLmNvbS9nZW5zaW0vbW9kZWxzL3dvcmQydmVjLmh0bWw.)

or GloVe model: <http://nlp.stanford.edu/projects/glove/>