

## Question 1

**(a) What is the benefit of using a counting based vector representation like TF-IDF over a learning based representation like Word2Vec? [5 points ]**

Huge data can be processed using counting-based vector representation due to parallelization capability.

Loss of information is less in case of dimensionality reduction

**(b) What are the advantages of character-based representation like fasttext over word-based representation like Word2Vec? [5 points ]**

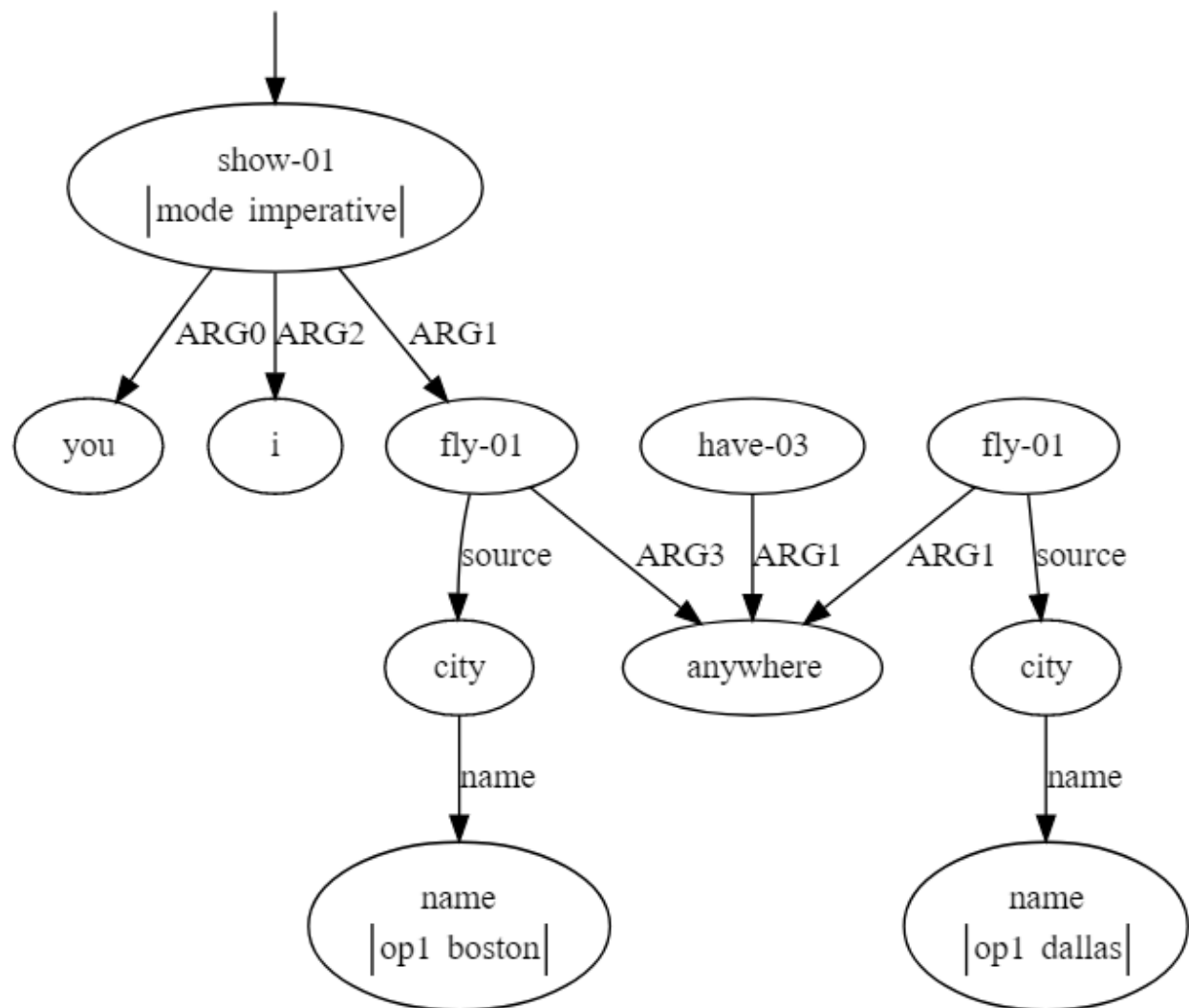
Out-of-vocabulary words can be handled using character based representation. It also helps in handling typos

## Question 2: Semantics

**[8 + 12 = 20 points]**

Consider text = “show me flights from Boston to anywhere that has flights to Dallas”

Using the online AMR tool at <http://amparser.coli.uni-saarland.de:8080/>, find the AMR structure of the example text. Paste it below.



The AMR refers to specific variant of show, fly and have. Use pennbank and show the predicate, its arguments and its meaning. Use a propbank visualizer like <https://verbs.colorado.edu/verb-index/index.php>

show.01 - cause to see

SHOW-V NOTES: Based on big corpus, comparison with 'see'. Member of Vncls conjecture-29.5-2, transfer\_mesg-37.1.1-1-1, crane-40.3.2, indicate-78-1-1, reflexive\_appearance-48.1.2. Updated by Julia, 11/2010. (from show.01-v)  
SHOW-N NOTES: Roleset based on show.01. Verbnets class conjecture 29.5. Framed by Katie. (from show.02-n)  
SHOWING-N NOTES: Roleset based on noun entry show.01; corresponds to Verbnets class conjecture 29.5. Framed by Claire. (from showing.01-n)

Aliases:

- show (n.)
- show (v.)
- showing (n.)
- make\_showing (l.)

Roles:

- ARG0-CAU: shower
- ARG1-PPT: thing seen/shown
- ARG2-GOL: seer, audience

fly.01 - fly through the air, travel via air, fly in a flock.,

It can be very difficult to determine if a subject is a pilot or a traveller. When in doubt, go with traveller. (from fly.01-v)  
FLY-V NOTES: Based on financial subcorpus. Member of Vncls spatial\_configuration-47.6, run-51.3.2, drive-11.5-1, nonvehicle-51.4.2. (from fly.01-v) FLIGHT-V NOTES: Roleset based on parallel additions to VN, PB and sense groupings. No appropriate VerbNet entry found. Framed by Claire. (from flight.01-v) FLIGHT-N NOTES: Roleset based on verb entry fly.01, corresponds to Vncls spatial\_configuration-47.6, run-51.3.2, drive-11.5-1, nonvehicle-51.4.2. Differs from verb roleset in that source and destination arguments seemed more important than benefactive, so these have been added and benefactive omitted (use argm-gol for benefactive) (from flight.01-n) FLYING-N NOTES: Added by Julia based on BOLT (from flying.01-n)

Aliases:

- fly (v.)
- flight (v.)
- flight (n.)
- flying (n.)
- take\_flight (l.)

Roles:

- ARG0-PAG: pilot, agentive entity capable of flight (like a bird)
- ARG1-PPT: passenger, cargo
- ARG2-VSP: aircraft flown, flight number, steed, non-agentive thing in motion
- ARG3-VSP: type of flight plan, mission, cognate object (like 'a flight' or 'sorties')
- ARG4-GOL: airline

have.03 - own, possess

HAVE-V NOTES: Frames file for 'have' based on sentences in wj. No Verbnets entry. (from have.03-v predicate notes)

Aliases:

- have (v.)

Roles:

- ARG0-PAG: owner
- ARG1-PPT: possession

bummer

Four of the five surviving workers have asbestos - related diseases , including three with recently diagnosed cancer .