

Speech processing

- 1- **The signal that is used in speech recognition is known as?**
 - (A). Acoustic signal
 - (B). Electric signal
 - (C). Electromagnetic signal
 - (D). Radar
 - (E). None of these
- 2- **Which is known as the properties of the signal that extend over interval?**
 - (A). Hops
 - (B). Rate
 - (C). Frames
 - (D). All of these
 - (E). None of these
- 3- **Which of the following model provides the probability of every word following every other word?**
 - (A). Gram model
 - (B). Diagram model
 - (C). Bigram model
 - (D). Speech model
 - (E). None of these
- 4- **Which specifies the prior probability of every utterance?**
 - (A). Sound model
 - (B). Model
 - (C). Language model
 - (D). All of these
 - (E). None of these
- 5- **Select the dominant modality for communication between humans?**
 - (A). Hear
 - (B). Speech
 - (C). Smell
 - (D). None of these
 - (E). None of these
- 6- **Select the periodic changes in pressure that propagate through the air?**
 - (A). Airwaves
 - (B). Sound waves
 - (C). Rate
 - (D). None of these
 - (E). None of these
- 7- **The study of how language sounds are called?**
 - (A). Phonology
 - (B). Biology
 - (C). Trilogy

- (D). Speechology
- (E). None of these

8- Which is considered as a problem of probabilistic inference?

- (A). Utterance
- (B). Speaking
- (C). Hearing
- (D). Speech recognition**
- (E). None of these

9- What will be the perplexity value if you calculate the perplexity of an unsmoothed language model on a test corpus with unseen words?

- (a) 0
- (b) Infinity**
- (c) any non-zero value
- (d) None of the above

10- Which of the following NLP tasks use sequential labeling technique?

- (a) POS tagging
- (b) Named Entity Recognition
- (c) Speech recognition
- (d) All of the above**

11- What type of ambiguity exists in the word sequence "Time flies"?

- (a) Syntactic
- (b) Semantic**
- (c) Phonological
- (d) Anaphoric

12- Which is used to capture the internal structure of the phones?

- a) One-state phone model
- b) Two-state phone model
- c) Three-state phone model**
- d) All of the mentioned?

13- Which are partially captured by triphone model?

- a) Articulation effects
- b) Coarticulation effects**
- c) Both Articulation & Coarticulation effects
- d) None of the mentioned?

14 - In POS tagging problem, what is the output of Viterbi algorithm?

- (a) Probability of word sequence given a particular tag sequence
- (b) Optimal transition and observation probabilities for HMM

(c) Probability of the best tag sequence given a word sequence

(d) None of the above

15- Given a sequence of observations and a HMM model, which of the following fundamental problems of HMM finds the most likely sequence of states that produced the observations in an efficient way?

(a) Evaluation problem

(b) Likelihood estimation problem

(c) Decoding problem

(d) Learning problem

16- Zipf's law states that

(a) The frequency of a word type is proportional to its rank by frequency.

(b) The frequency of a word type is inversely proportional to its rank by frequency.

(c) The frequency of a word type does not influence its ranking.

(d) None of the above

17- Which of the following is not a problem when using Maximum Likelihood Estimation to obtain the parameters in a language model?

(a) Out-of-vocabulary items

(b) Over-fitting

(c) Smoothing

(d) Unreliable estimates when there is little training data

18- The words "window" and "room" are in a lexical semantic relation

(a) hypernym - hyponym

(b) hypernym - meronym

(c) holonym - hyponym

(d) meronym - holonym

19- In an HMM, observation likelihoods measure

- (a) The likelihood of a POS tag given a word
- (b) The likelihood of a POS tag given the preceding tag
- (c) The likelihood of a word given a POS tag**
- (d) The likelihood of a POS tag given two preceding tags

20- Speech recognition is

- A. Ability to input data directly into a computer system by speaking to it**
- B. Ability to output data directly from a computer system by speaking.
- C. Processing of voice in computer systems
- D. None of these

21- A painful, inflammatory condition that affects the wrist portion of the median nerve and is often associated with repetitive actions such as typing is:

- a- Carpal tunnel syndrome**
- b- Tendonitis
- c- Tennis elbow
- d- Wrist wrap

22- What is the fastest speech of words per minute that speech recognition systems can recognize speech?

- a- 75
- b- 150
- c- 100
- d- 200**

23- When starting the training wizard for voice recognition software, what is the FIRST step in the training process?

- a- Adjusting the position and volume of the microphone**
- b- Creating a profile
- c- Reading a passage to the program
- d- Selecting a reading passage

24- Commands that make speaking to a speech recognition system almost as natural as talking to a person are known as NLT, an acronym for:

- a- Natural Lab Technology
- b- Natural Language Technology**
- c- Neuron Language Technology
- d- Natural Language Technology

25- These are currently how different software brands that provide speech recognition abilities to computers?

- a- Only one
- b- One or two
- c- Two or three
- d- **Three or more**

26- A way of speaking that is a characteristic of a geographic region is called a (n)

- a- **Accent**
- b- Inflection
- c- Draw
- d- Slur

27- Which is necessary for the speech recognition system requires the user to pause momentarily between each word?

- a- Continuous
- b- **Discrete**
- c- Speaker dependent
- d- Speaker independent

28- A mode for having the software interpret and execute formatting commands in SOME speech recognition programs is known as:

- a- Command
- b- **Dictation**
- c- Dialog
- d- Control

29- A special file that collects data about a user's speech patterns is called a:

- a- Cache
- b- Database
- c- **Profile**
- d- Disk file

30- The first step when using the speech recognition software is to:

- a- **Complete the initial enrollment**
- b- Properly adjust the microphone volume level
- c- Save the document
- d- Say your name

31- What command initializes an action that allows one to delete the last utterance spoken by the user?

- a- New line
- b- **Scratch that**
- c- Select that
- d- Spell that

32- To put a question mark at the end of the sentence when dictating say?

- a- Question
- b- Question mark**
- c- Insert question
- d- Insert question mark

33- To put a colon at the end of the sentence when dictating say:

- a- Colon**
- b- Colon here
- c- Insert colon
- d- No of the above

34- A group of words that express an idea is called a:

- a- Clause
- b- Paragraph
- c- Phrase**
- d- Sentence

35- Using the profile of another user will:

- a- Automatically update the user's profile
- b- Cause the user to have to shout for accuracy.
- c- Make accuracy drastically decline**
- d- Increase the other user's vocabulary

36- Training will create a/an

- a- Database
- b- Profile**
- c- Program
- d- Screen name

37- To go to a new line when dictating say:

- a- New line**
- b- Next line
- c- Go to next line
- d- Insert New line

38- To put a space into the text when dictating say:

- a- Insert a space
- b- Space bar**
- c- Space here
- d- Insert space

39- What type of microphone is MOST preferred when using a speech recognition system?

- a- Headset with vlume control and on/off switch
- b- Headset with a volume control
- c- Headset without controls

d- Boom

40- The process in which a user reads a sample script aloud, enabling the speech recognition system to record an individuals unique speech patterns is:

- a- Audio inputting
- b- Listening
- c- Synchronizing
- d- Training

41- _____ is the type of morphology that changes the word category and affects the meaning.

- a) Inflectional
- b) Derivational**
- c) Cliticization
- d) All of the above

42- computer *vs computational* is an example of _____ morphology.

- a) Inflectional
- b) Derivational**
- c) Cliticization
- d) None of the above

43- Which of the following techniques can be used for the purpose of keyword normalization, the process of converting a keyword into its meaningful base form?

- a) Lemmatization**
- b) Levenshtein distance
- c) Morphing
- d) Stemming

44- Which of the following areas where NLP can be useful?

- a) Automatic text summarization
- b) Automatic question answering systems
- c) Information retrieval

d) All of the above

45- Which of the following is the recognized statement by the Maximum Matching algorithm (Greedy - forward pass only) for string *thetabledownthere*?

- a) the table down there

b) theta bled own there

- c) both (a) and (b)
- d) None of the above

46- You have collected a data of about 10,000 rows of tweet text and no other information. You want to create a tweet classification model that categorizes each of the tweets in three buckets – positive, negative and neutral. Which of the following models can perform tweet classification with regards to context mentioned above?

- a) Naïve Bayes
- b) Support Vector Machine
- c) Language model

d) None of the above

47- One of the major challenges that causes almost all stages of Natural Language Processing a hard one is about handling,

a) Ambiguity of sentences

- b) Tokenization
- c) POS tagging
- d) All of the above

48- Morphemes that cannot stand alone and are typically attached to another to become a meaningful word is called,

- a) Free morphemes
- b) Bound morphemes**
- c) Derived morphemes
- d) Lexical morphemes

49- In an HMM, tag transition probabilities measure

- a) The likelihood of a POS tag given a word
- b) The likelihood of a POS tag given the preceding tag**
- c) The likelihood of a word given a POS tag
- d) The likelihood of a POS tag given all preceding tags

50- Morphotactic is a model of

- a) Spelling modifications that may occur during affixation
- b) How and which morphemes can be affixed to a stem**
- c) All affixes in the English language
- d) Ngrams of affixes and stems

51- In an HMM, observation likelihoods measure

- a) The likelihood of a POS tag given a word
- b) The likelihood of a POS tag given the preceding tag
- c) The likelihood of a word given a POS tag**

d) The likelihood of a POS tag given two preceding tags

52-Which of the following instances the regular expression “\b(one | two | three)\b” can recognize?

a) “one”

b) “onetwo”

c) “TWO”

d) All of the above

53- Which of the following can be used to implement orthographic rules?

a) Finite State Automata (FSA)

b) Finite State Transducer (FST)

c) Hidden Markov Model (HMM)

d) None of the above

54- The words ‘*there*’ and ‘*their*’ causes which of the following type of ambiguity?

a) Syntactic

b) Semantic

c) Phonological

d) Pragmatic

55- Knowledge of the relationship of meaning to the goals and intentions of the speaker is _____

a) Morphology

b) Semantics

c) **Pragmatics**

d) Discourse

56- Which of the following NLP problems can be solved with Hidden Markov Model (HMM)?

a) POS tagging

b) Speech recognition

c) Spelling correction

d) **All of the above**

57-Which of the following is TRUE about CRF (Conditional Random Field) and HMM (Hidden Markov Model)?

a) CRF is generative model and HMM is discriminative model

b) Both CRF and HMM are generative model

c) **CRF is discriminative model and HMM is generative model**

d) Both CRF and HMM are discriminative model

58- Which of the following is an advantage of Porter stemmer over a full morphological parser?

a) The stemmer is better justified from a theoretical point of view

b) The output of a stemmer is always a valid word

c) **The stemmer does not require a detailed lexicon to implement**

d) None of the above

59- Which of the following measurements are used to evaluate the quality of entity recognition?

a) Precision

b) Recall

c) F-measure

d) All of the above

60-What is the number of trigrams in a normalized sentence of length n words?

a) n

b) $n-1$

c) $n-2$

d) $n-3$

61-The study of the sound patterns in natural language and the rules that govern them is:

a) Phonetics

b) Morphology

c) Phonology

d) Syntax

62- Which of the following is an NLP task that involves determining all referring expressions that point to the same real-world entity?

- a) Coreference resolution
- b) Named entity recognition
- c) Information extraction
- d) All of the above

63- Which of the following models can be estimated by maximum likelihood estimator?

- (a) Support Vector Machines
- (b) Maximum Entropy Model
- (c) k Nearest Neighbor
- (d) Naive Bayes.

64- “He was running quickly into the stadium”. What type of phrase is this?

- a) Noun phrase
- b) Verb phrase
- c) Prepositional phrase
- d) Adjectival phrase

65- If your training loss increases with number of epochs, which of the following could be a possible issue with the learning process?

- a) Regularization is too low and model is overfitting

b) Regularization is too high and model is underfitting

c) Step size is too large

d) Step size is too small

66- Which of the following best describes grammar induction?

a) Supervised learning problem

b) Conditional Random Field problem

c) Maximum-A-Posteriori (MAP) estimation problem

d) **Unsupervised learning problem**

67- Which of the following is not a problem when using Maximum Likelihood Estimation to obtain parameters in a language model?

a) Unreliable estimates where there is little training data

b) Out-of-vocabulary terms

c) Overfitting

d) **Smoothing**

68- Which of the following is the main advantage of neural transition-based dependency parsers over non-neural transition-based dependency parsers?

a) It chooses transitions using more words in the stack and buffer

b) It generates a larger class of dependency parses

c) **It relies on dense feature representations**

d) It models a grammar whereas traditional parsers do not

69- Which of the following smoothing techniques is most complex?

- a) Add-1 smoothing
- b) Add-k smoothing
- c) Witten-Bell smoothing
- d) Good-Turing smoothing

70- In add-k smoothing method, for a small k value, what would be perplexity?

- a) High perplexity
- b) Zero perplexity
- c) Low perplexity
- d) Perplexity is not disturbed

71- Using TF-IDF (Term Frequency - Inverse Document Frequency) values for features in a uni-gram bag-of-words model should have an effect most similar to which of the following?

- a) Lowercasing the data
- b) Dropout regularization
- c) Removing stop words
- d) Increasing the learning rate

72- Which of the following increases the weight of rarely occurring terms in the document set?

- a) Term frequency
- b) Word frequency

c) Inverse document frequency

d) Bi-gram frequency

73- The act of converting a text document into a set of individual words is referred to as _____ .

a) Tokenization

b) Stemming

c) Lemmatization

d) All of the above

74- Which of the following techniques is most appropriate to the process of word normalization?

(a) Lemmatization

(b) Stemming

(c) Stop word removal

(d) Rooting

75- Words may have multiple meanings. This leads to what type of ambiguity in NLP?

(a) Syntactic ambiguity

(b) Anaphoric ambiguity

(c) Semantic ambiguity

(d) Lexical ambiguity

76- "I went to the school, and they told me come on next day". What type of ambiguity present in the given sentence?

(a) Syntactic ambiguity

(b) Anaphoric ambiguity

(c) Semantic ambiguity

(d) Lexical ambiguity

77- In a language, it is usual to have a word with more than one meaning even within its semantic class (polysemy). Which of the following tasks would help us in choose the right meaning as per the context in which the word is used?

(a) Lemmatization

(b) Word Sense Disambiguation

(c) Stemming

(d) Discourse analysis

78- HMM for POS tagging problem assumes words are independent from each other.

(a) TRUE

(b) FALSE

79- In machine translation, a parallel corpus is required to estimate the language model.

(a) TRUE

(b) FALSE

80- Given a unigram language model and a bigram language model estimated on the same text collection without smoothing, perplexity of the unigram language model will be much larger than that of the bigram language model on this same training corpus.

(a) TRUE

(b) FALSE

81- To make it computationally feasible, Naive Bayes assumes that features are independent from each other.

(a) TRUE

(b) FALSE

82- k-means clustering is an NP-hard problem.

(a) TRUE

(b) FALSE

83- Document triage is one of the steps of text pre-processing

(a) TRUE

(b) FALSE

84- If the boundaries between morphemes are not clear and the component morphemes can express more than one grammatical meaning, we call those words as **agglutinative**.

(a) TRUE

(b) FALSE

85- Lemmatization and Stemming both perform the same job.

(a) TRUE

(b) FALSE

86- **Edit distance** is a measure that calculates the similarity between two strings based on the number of edits to be executed.

(a) TRUE

(b) FALSE

87- Models that assign probabilities to sequences of words are called Support Vector Models.

(a) TRUE

(b) FALSE

88- Number of trigrams in the following sentence is 4; “calculates the similarity between two strings”.

(a) TRUE

(b) FALSE

89- We normalize the counts of words in an n-gram model to make the value to fall between 0 and 100.

(a) TRUE

(b) FALSE

90- To calculate the bigram probability of a word w_n given the previous word w_{n-1} , we count the occurrence of word sequence " $w_{n-1} w_n$ " and normalize this by the count of w_{n-1} .

(a) TRUE

(b) FALSE

91- It is better to compute the probabilities in a language model as log probabilities.

(a) TRUE

(b) FALSE

92- While computing the language model probabilities in log format, we multiply the log probabilities to derive the probability of the given model.

(a) TRUE

(b) FALSE

93- To measure the quality of a language model, we use the metric intrinsic evaluation on the training data set.

(a) TRUE

(b) FALSE

94- Since the language model is meant to assign non-zero probability to unseen strings of words, a mandatory desirable property is Smoothing.

(a) TRUE

(b) FALSE

95- The production rules of Context Free Grammar (CFG) should be in Chomsky Normal Form (CNF).

(a) TRUE

(b) FALSE

96- In backoff smoothing technique, we use the bigrams if the evidence for trigram is insufficient.

(a) **TRUE**

(b) FALSE