

# QUIZ #1 TOPICS

CS134

The quiz on 9/28 will cover the following topics:

- Basic linguistic concepts – ngrams, parts-of-speech, grammars
- Basic probability: conditional, joint probabilities, expectations, marginalization. Bayes' Rule
- Use of Bayes' rule for probabilistic inference
- Naïve Bayes, conditional independence
- Maximum Entropy. Form of model
- Four steps/requirements involved for developing/specifying a statistical model/classifier
- Idea of maximum likelihood, maximum likelihood for Naïve Bayes
- Bayesian Networks:
  - Conditional Independence
  - Markov Blanket
  - Benefits of BN representation

Example types of quiz questions:

- Given a grammar and a sentence, construct a phrase structure parse (i.e. derivation)
- Given  $P(S|M)$ ,  $P(M)$ , derive  $P(M|S)$
- Derive  $P(\text{Meningitis}|\text{Fever})$  given  $P(\text{StiffNeck}, \text{Fever} | \text{Meningitis})$ ,  $P(\text{Meningitis})$
- Explain the advantages of model A over model B
- Assume X and Y are conditionally independent given Z, show that  $P(X|Y,Z) = P(X|Z)$
- Explain, in words, how parameters are estimated with Naïve Bayes, MaxEnt
- Identify a type of unsupervised learning
- Describe the difference between a generative model and a discriminative one