# Language Models



Language Models

**1. Language Models**
- Language Models → Models That Assign Probability to a Sequence of Word Tokens
- Probabilistic Classification → Compute Probabilty of a Label Conditioned on The Text
- Computing Probability of Text → Models Assign Probability to a Sequence of Word Tokens
- Vocabulary Set V → Set of Words Used in The Language Model

**2. Applications**
- Machine Translation → Convert Text From Source Language to a Target Language
- Speech Recognition → Convert Audio Signal to Text

**3. PROBABILITY APPROXIMATION**
- BIGRAM APPROXIMATION → PROBABILITY OF A SENTENCE CAN BE APPROXIMATED USING BIGRAMS
- Padding with Special Symbol → BEGINNING AND END OF SENTENCE

**4. ESTIMATING PROBABILITY**
- EXPECTATION-MAXIMIZATION → LEARNING WITH MISSING DATA
- MISSING → N-GRAM
- GENERATIVE MODEL FOR EM → SOLVING FOR S USING WORD COUNTS
- ZIPF'S → WORD FREQUENCY DISTRIBUTION
- N-GRAM LANGUAGE MODELS → PROBABILITY OF A SEQUENCE AS PRODUCT OF PROBABILITIES OF SUBSEQUENCE
- WORD PREDICTION TASK → RELATIVE FREQUENCY ESTIMATE OF PROBABILITY