1. **CS686. Total Assignments: 4. Score: 400/400**

- Assignment #1 -- Topics
  - Solving Problem by Searching
    - Uninformed Search Problems
      - BFS/DFS
      - Iterative Deepening
    - Informed Search Problems
      - Best First Search Algorithm (Greedy search)
      - A* search algorithm
      - Hill Climbing Search Algorithms
  - Constraint Satisfaction Problems
- Assignment #2 — Topics
  - Reasoning Under Uncertainty:
    - Probability Theory models Uncertainty.
      - Random variable, multi-valued random variables; probability distribution.
    - Utility Theory models Preferences.
      - Principle of maximum expected utility (MEU).
    - Decision Theory: Combines probability theory and utility theory and helps modelling the decision problems.
    - Static Inference
      - Bayesian Networks
        - Effective mean of representation and inference under uncertainty;
    - Static Decision Making
      - Decision Networks a.k.a. influence diagrams
    - Terms: Value of Information, Variable Elimination, Policy Optimization
- Assignment#3 — Topics
  - Decision Trees, Inductive Learning, and Ensemble Learning
  - Markov Networks a.k.a. Markov Random Fields
  - First order Logic
  - Markov Logic Networks: Combine Markov Networks and First-order logic.
    - Parameter Learning
    - Lifted Inference
- Assignment #4 - Topics
  - Reasoning Under Uncertainty over Time
    - Sequential Inference
      - Hidden Markov Model
      - Dynamic Bayesian Networks
    - Sequential Decision Making
      - Partially Observable Markov Decision Processes (POMDP)
      - Dynamic Decision Networks
  - Statistical Learning
    - Bayesian Learning, Maximum a posteriori (MAP), Maximum Likelihood
    - Expectation Maximization Learning (EM Learning)