

CS836 Rough Sets and Applications

Assignment 3

Available on March 13, 2018

Due date: March 27, 2018

1. Reducts

- Give a definition of a reduct of an information table.
- Give a definition of a reduct of a consistent decision table.
- Give a definition of a reduct of a decision table. Show that your definition is applicable to both consistent and inconsistent decision table.
- Give a general definition of a reduct to cover reducts in an information, a consistent decision table, and a decision table. **Hint:** You may consider two subsets of attributes $X, Y \subseteq AT$. The two subsets are arbitrary and may have a non-empty overlap. The notion we have will be “a reduct of X with respect to Y .”

2. Probabilistic rough sets

- Give a definition of probabilistic rough set approximations. Show that Pawlak rough set approximations are a special case.
- Explain the motivations for introducing probabilistic rough sets.

3. Decision-theoretic rough sets

- Describe the Bayesian decision procedure.
- Derive the probabilistic rough set approximations by using the Bayesian decision procedure.

4. Describe the main results of naive Bayesian rough sets.