TECHNISCHE UNIVERSITEIT DELFT
Faculteit Elektrotechniek, Wiskunde en Informatica

TU Delft

Exam IN4335 Seminar Algorithms: Economics and Computation

June 22, 2015

- This is a closed book examination with 12 questions worth of 12 points in total.
- Your mark for this exam part will be ten times the number of points for your answers divided by 12.
- The final grade of this course is the weighted average of the mark for this exam, of your lecture, and of the answers to the homework questions, rounded to the nearest half of a whole number. That is, 9.7 is rounded to 9.5, and 5.8 is rounded to 6.
- Use of book, notes, and slides is not allowed.
- Specify your name, student number and degree program, and indicate the total number of submitted pages on the first page.
- Write clearly, use correct English, and avoid verbose explanations. Giving irrelevant information may lead to a reduction in your score.
  Notice that almost all questions can be answered in a few lines!
- This exam covers the presented Chapters from the book of Parkes and Seuken (2015), *Economics and Computation*.
- The total number of pages of this exam is 1 (excluding this front page).

1. (1 point) Which of the games "Prisoner's dilemma", "Matching pennies", "Battle of the sexes" has/have a dominant strategy equilibrium?
2. (1 point) Explain the idea behind BitThief.
3. (1 point) How do Parkes and Seuken justify the assumption that bidders know each other's value to analyse the Nash equilibria of the generalized second-price (GSP) position auction?
4. (1 point) What are disadvantages of algorithmically created kidney donor cycles/chains in real world situations? Name at least three.
5. (1 point) How do human computation algorithms differ from normal algorithms?
6. (1 point) Give a definition of crowdsourcing, make sure to include the notion of volunteer versus paid crowdsourcing.
7. (1 point) Rank aggregation: explain the difference between rank-order models and pairwise-comparison models and give for both model types an example where it could be used.
8. (1 point) In information elicitation, give two examples of where it would be valuable to get true subjective beliefs.
9. (1 point) Why can we expect a prediction market to outperform expert advice? Give two reasons.
10. (1 point) The content-based probabilistic method employs the use of 'naive' Bayesian classification. How does this differ from regular Bayesian classification?
11. (1 point) Digg is a social news website. Registered users can submit a link to any news article. Other users can *digg* the entry if they like it, or *bury* if they don't like it. The idea of Digg is that the community rather than a news agency decides which news story receives the most attention. Is there a potential *adverse selection problem* present on news websites? Explain in how far this is the case for Digg.
12. (1 point) What is "the concealed mining strategy" for Bitcoin?

End of test