Homework #4

Deadline: Monday, 1 October 2012, 13:00

Submit answers to three of the four questions below.

Question 1 (10 marks)

Attend the *Workshop on Frameworks for Multi-Agent Aggregation* held on Tuesday, 25 September 2012 in the VOC Zaal at the University of Amsterdam. Select one of the talks given a the workshop and write a short exposition of the research reported on in this talk. Write at most two pages of text.

Question 2 (10 marks)

The purpose of this exercise is to explore the boundaries of some of the impossibility theorems we have discussed.

(a) Show that the Muller-Satterthwaite Theorem ceases to hold when we replace strong monotonicity by weak monotonicity.

(b) Show that the Gibbard-Satterthwaite Theorem ceases to hold when we drop the condition of surjectivity.

(c) Show that the Duggan-Schwartz Theorem ceases to hold when we replace the condition of immunity against manipulation by both optimistic and pessimistic voters by immunity against manipulation by optimistic voters only.

Question 3 (10 marks)

Analyse the computational complexity of the necessary winner problem for the family of k-approval rules.

Question 4 (10 marks)

What is the best upper bound for the compilation complexity of k-approval you are able to provide? Justify your answer.