

Homework #2

Deadline: Wednesday, 18 February 2015, 11:00

Question 1 (10 marks)

We have seen two domain restrictions for judgment aggregation that ensure that the majority rule produces a consistent outcome. The purpose of this question is to understand how these two restrictions relate to each other: Show that every profile that is unidimensionally aligned is also a profile that is value-restricted.

Question 2 (10 marks)

In binary aggregation with integrity constraints, we can define the *uniform quota rule* with quota λ as the rule that accepts a given issue if at least λ individuals do. Characterise the class of all integrity constraints Γ for which the uniform quota rule with quota λ is guaranteed to always return an outcome that satisfies Γ . Justify your answer.

Hints: We have proved a similar result for formula-based judgment aggregation in class. Note that in the literature you can find characterisation results of quota rules formulated in terms of the syntactic structure of the integrity constraint. This is more advanced than what is expected here. A semantic characterisation of Γ is sufficient.

Question 3 (10 marks)

Give a succinct yet precise formal definition for the *greedy-max rule* for binary aggregation with integrity constraints sketched in class. Recall that this is the rule inspired by Tideman's *ranked-pairs rule* for preference aggregation. Note that you are not supposed to state a specific integrity constraint, but only the aggregation rule.