COST Action IC1205 on Computational Social Choice: STSM Report

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During my visit at University of Patras, we focused our attention on strategic voting, and in particular we considered two different problems that I briefly introduce in the reminded of this report.

The first problem we look at is about the dynamic price of anarchy for positional scoring rules. The dynamic price of anarchy is considered as the price of anarchy of the equilibrium reached after the voters sequentially submit manipulated preferences, starting from the truthful profile, in which every voter submit her truthful preferences. In particular we considered a positional scoring rule that has not been considered so far in the literature yet: the range voting. In range voting each voter has a total of one unit of splittable score which she can split among different alternatives (e.g., she can give 70% to alternative a, 20% to alternative b, and 10% to alternative c). The winner is the alternative with the maximum total score. We have achieved preliminary results for the investigation of the dynamic price of anarchy in range voting.

We consider a new setting of dynamic strategic voting. We mainly focus on positional scoring rules and consider the setting in which the election is made of a sequence of consecutive polls, and in each poll each voter votes, submitting her manipulated preferences, in accordance with both her truthful preferences and her perception about the relative changes in the scores of the candidates in the next poll. In particular, we assume that at the first poll each voter votes truthfully. At the end of each poll, for each pair of alternatives, each voter estimates the probability that the two alternatives may be in a sufficiently close race for the first place in the next poll, and that her vote alone could swing the result from one to the other alternative. According to these probabilities and to her truthful preferences, we assume that each voter follows the principle of expected utility maximisation to determine which vote she will submit in the next poll. An equilibrium is the result of a poll in which no voter is willing to change her intention of vote. The winner of the election is the candidate with the maximum score at the equilibrium. We are interested in designing voting rule guaranteeing the existence of equilibria and the quick convergence to equilibria. We obtained positive preliminary results showing the existence of voting rules guaranteeing quick convergence to equilibria under reasonable assumptions on the preferences.