COST Action IC1205 on Computational Social Choice: STSM Report

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During this STSM I had the opportunity to collaborate with my host Alessandro Farinelli and his postdocs and students on various IC1205-related activities. First of all, we explored the possibility of extending our work on "Recommending Fair Payments for Large-Scale Social Ridesharing" (in Proc. of ACM-RecSys-2015), by considering weighted voting games and similar models for online coalition formation for ride-sharing scenarios. The computational properties of coalition formation protocols in such settings have not been examined in the past. Our discussions (jointly with Dr. Filippo Bistaffa, a postdoc at the host institution), evolved into the question of *devising tractable ways* to compute fair payoff distributions among participants in cooperative games over graphs. We believe that we have been able to devise a polynomial-time algorithm for computing a celebrated fair payoff division concept in such cooperative games. In case of eventual publication, the IC1205 action's support will be acknowledged appropriately, as per instructions.

A second activity incuded finalizing a revised submission to AIJ, co-authored by Filippo Bistaffa, Alessandro Farinelli, and myself, entitled "A Cooperative Game-Theoretic Approach to the Social Ridesharing Problem". In case of eventual publication, the IC1205 action's support will be acknowledged appropriately, as per instructions.

A third activity included discussing with Alessandro Farinelli and another postdoc of his, Dr. Alberto Castellini, on exploring how my previous work on forming overlapping coalitions and on the computational properties of computing stability concepts (and optimal coalitional structures) in graph-restricted settings, can be exploited for the construction of appropriate *sets of variables* that can are required for statistical testing in various domains (a specific application domain of interest is studying the development of *peronospora* disease in basil crops). In case of eventual publication of related results, the IC1205 action's support will be acknowledged appropriately, as per instructions.

In conclusion, this was, I believe, a particularly interesting and fruitful STSM, which allowed me to strengthen existing collaboratons, and involved the examination of various research topics closely related to those of IC1205 Cost Action, and could potentially lead to two or three related publications.