COST Action CA16228 'European Network for game Theory': STMT Report
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In my short-term scientific mission at ULB I worked with Prof. Jean-Francois Raskin and Prof. Emmanuel Filiot, pursuing the investigation of open questions related to the works in [1,2,3] as well as on brainstorming for new ideas, hopefully leading to novel research directions within the areas of automata and game theory (applied to the automatic synthesis of reactive systems).
In particular, we discuss the extension of [3] toward a general *finite* valuedness procedure for weighted automata (WA) over a group, that is not given in input a bound *k* on the number of different values that the considered WA could associate to a given word (on the corresponding accepting runs). Although somehow incremental, the issue of extending [3] from k-valuedness to proper finite-valuedness is not immediate and further research is needed to accomplish the task. We further discuss the development of the works in [1,2], concerning non-zero sum multiplayer games for rational synthesis with perfect [2] and imperfect [1] information, pursuing the extended version of [2] toward a journal version.
We finally explore new research directions, by considering novel connections between constraint reasoning, machine learning and game theory. In particular, we consider a constrained version of the classic Angluin-style NFA learning, brainstorming on theoretical and practical relevance of possible instantations of the above problem.

[1] E. Filiot, R. Gentilini, J.-F. Raskin. Rational Synthesis under Imperfect Information. In proceedings of LICS, 2018.
[2] R. Condurache, E. Filiot, R. Gentilini, J.-F. Raskin. The Complexity of Rational Synthesis. In proceedings of ICALP, LIPIcs 55, pp 121:1-121:15. Schloss Dagstuhl-LZI, 2016.
[3] E. Filiot, R. Gentilini, J.-F. Raskin. Finite valued weighted automata. In proc. of FSTTCS, vol. 29 of LIPIcs, pp. 133-145, 2014.