

SICSA Report from DVF - Dr Madalina Croitoru

Host: Professor Nir Oren, University of Aberdeen

1st April 2019 to 31st May 2019

Prof. Croitoru met and discussed research ideas around natural language generation, normative reasoning and the modelling scientific knowledge discovery with several academics within the department (Prof. Coghill, Dr Kollingbaum, Dr Sripada). In addition, Prof Croitoru delivered a PG level masterclass in rule based non-monotonic reasoning and its linkages to argumentation-based reasoning.

Much of Prof. Croitoru's time was spent collaborating with Dr Oren, building on two ideas. First, together with a post-doctoral research assistant, they examined how argument-based preference elicitation [1] could be combined with strategic argumentation [2]. The primary output of this line of research is a paper (currently being written) which will be submitted to a conference in the next month or so. The second strand of research revolved around argument-based ethical decision making, and how paradoxes which arise in existing approaches (such as value-based argumentation frameworks [3]) can be resolved. The solution under investigation involves using ideas from normative reasoning to identify when arguments for some outcome do, or do not, achieve ethical goals. Apart from modelling the problem, we are also investigating decision mechanisms which will allow agents to decide how to act by balancing their goals against ethical standards. We are in the process of preparing a paper (targeting AAAI) which will describe this work and aim to publish a longer output in a special issue of AIJ on the topic. We are hopeful that we will be able to also apply for some funding on the topic under investigation and believe that these outputs are only the start of a very valuable research collaboration brought about by the DVF scheme.

[1] Mahesar, Quratul-ain, Nir Oren, and Wamberto W. Vasconcelos. "Computing Preferences in Abstract Argumentation." *International Conference on Principles and Practice of Multi-Agent Systems*. Springer, Cham, 2018.

[2] Rienstra, Tjitze, Matthias Thimm, and Nir Oren. "Opponent models with uncertainty for strategic argumentation." *Twenty-Third International Joint Conference on Artificial Intelligence*. 2013.

[3] Bench-Capon, Trevor. "Value based argumentation frameworks." *arXiv preprint cs/0207059* (2002).