In this paper, we propose solid admissibility that is a strengthened version of Dung’s admissibility [4] to obtain the most acceptable set of arguments. Besides, other solid extensions based on solid admissibility are defined. Such extensions not only include all defenders of its elements but also exclude all arguments indirectly attacked and indirectly defended by some agent(s). We also aggregate solid extensions by using approaches from judgment aggregation. Especially, when no quota rule prescribes Dung’s admissibility for any argumentation framework [2], we show that there exist quota rules preserve solid admissibility for any argumentation framework. 

Solid Semantics

To obtain the most acceptable arguments, we introduce solid admissibility in this section. We argue that the most acceptable arguments should satisfy two criteria: (i) they should have defenders as many as possible, and (ii) they should avoid the undesirable interference of some arguments. We will show that arguments in admissible extensions satisfy the criteria. Firstly, we strengthen Dung’s defense. A set of arguments solidly defends an argument if this set defends (in Dung’s sense) this argument and contains all the defenders of each element of this set.

Definition of Solid Admissibility

We can capture solid semantics by using propositional formulas with the techniques in [1].

Characterization for Solid Semantics

We can tune the parameters for attackers and offenders to obtain defenses with different levels of strength in graded semantics [5]. But it is impossible to characterise solid semantics by tuning the parameters since different attackers may have different numbers of counter-attackers. In prudent semantics [3], whenever an argument A is controversial w.r.t. an argument B, both prudent semantics and solid semantics can prevent A and B from occurring in the same extension. But there is a difference between these two types of semantics. Both A and B can occur in a prudent extension separately. However, B is excluded from any s-admissible extension, while A might occur in some s-admissible extension.