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Approximation of the Shapley value with sampling

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Distributing the total cost of a service-providing system among its users is a challenging topic in game theory. Shapley proposed in 1953 a cost-sharing mechanism nowadays known as the Shapley value. It is usually interpreted as assigning to each player the cost this player induces on the system. This cost assignment has many desirable properties but it is very time-consuming to compute exactly when the number of users is large. Thus, a large effort has been directed toward its approximation. Many Shapley value algorithms use sampling to compute a good approximation. In this package, we re-implement in Julia many algorithms from the literature which rely on sampling. We also implement several algorithms which were shown to improve the state of the art in the scientific paper corresponding to this package. Finally, We implement a framework to automatically generate systems which enable to test and compare Shapley approximation algorithms.

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