

First it is necessary for me to clarify the definition of Rashomon set in this paper: Considering that the data permit a large set of reasonably accurate predictive models to exist. If the set of accurate models is large, it often contains at least one model that is interpretable. Thus, this model is both interpretable and accurate. In other words, when there exist many different approximately-equally accurate models, it is likely to have an interpretable and accurate model.

why Rashomon set is realistic?

When the empirical Rashomon set is large, it is reasonable to assume that models with various desirable properties can exist inside it. For example: sparser, more transparent models, models that obey domain-specific constraints such as monotonicity along a given set of features, models that obey fairness constraints, and models that rely more on features that we can trust—these models may all live within the same large Rashomon set. That is the reason why Rashomon set is realistic.[1]

Rashomon set can be used to meaningfully capture explainable model?

Theorem 14, Existence of multiple simpler models.[1] Theorem 14 could have implications in practice, because if the data and algorithm admit a large Rashomon set on a complex space, it suggests that could be beneficial to locate models from simpler classes within the Rashomon set. These simpler models could be, for instance, models that are constrained to be explainable, and be prior to actually finding them. Finding interpretable models can often be computationally demanding, since this generally involves minimizing training loss subject to interpretability constraints, which are often discrete or challenging in other way. The connection between Rashomon sets and explainability of models occurs in two places. First, writer provided theoretical conditions under which simpler, high performing models may exist when the Rashomon set is large. Second, writer hypothesize that in cases where many different algorithms perform well, a large Rashomon set containing simpler or more explainable models may be in play. So Rashomon set can also be used to meaningfully capture explainable models.

References

[1] Semenova L, Parr R, Rudin C. A study in Rashomon curves and volumes: A new perspective on generalization and model simplicity in machine learning; 2018. In progress.