

Forest Agent

Matan Avitan, Matan S. Avitan, Einav Shenwald

The Department of Computer Science, Bar-Ilan University, Israel

About Forest Agent

The Forest Agent, an adaptive agent, enhances negotiations over time. Drawing inspiration from "EveAgent," it predicts price ranges using a Random Forest regressor.

Random Forest Algorithm

Random Forest is a versatile machine learning algorithm utilizing decision trees to create an ensemble of models, commonly employed for classification and regression tasks.

Agent's Design

The Forest Agent employs a Random Forest regressor to predict price ranges, offering a better real-world representation and hence enhancing negotiations.

Strategy

The agent learns price ranges from previous negotiations, handles non-linearity in world changes, and adapts the model over time, continually improving negotiations.

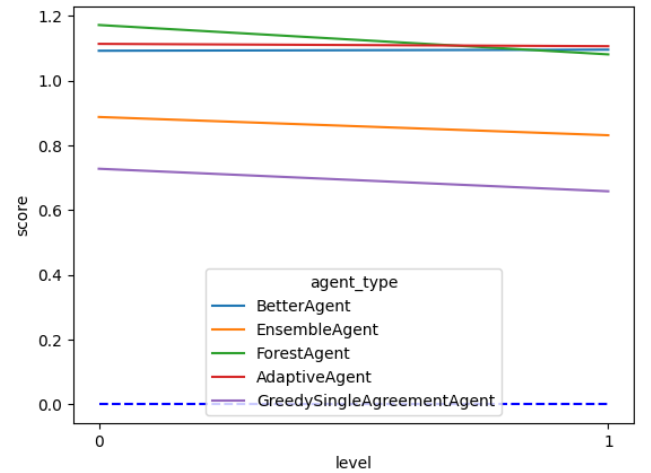
Building An Ensemble Agent

Our ensemble agent incorporated "PatientAgent," "SASAgent," and "GentleS," the previous winners. It collects all agents' proposals and extracts the best outcome.

Results

Forest Agent outperformed other agents, including the Ensemble Agent, as depicted below.

Agent Type	Mean	Std	Min	Median	Max
EnsembleAgent	0.68	0.31	0.01	0.78	1.01
ForestAgent	0.78	0.23	0.01	0.83	0.99
PatientAgent	0.56	0.36	0.00	0.63	1.00
SASAgent	0.55	0.39	0.00	0.56	1.00
GentleS	0.54	0.40	0.00	0.56	1.00



Conclusion

The Forest Agent's approach of using a Random Forest Regressor to learn price ranges proved effective, scoring the highest in the evaluation phase.