

Train 'n Trade: Foundations of Parameter Markets

Rebuttal Tables

		Agent <i>A</i>	Agent <i>B</i>
		Testing Acc. (%)	Testing Acc. (%)
MNIST + MLP	out-of-market	68.50%	72.97%
	FedAvg	81.98%	81.98%
	w/o alignment	84.64%	84.64%
	w alignment	86.96%	86.96%
CIFAR10 + ResNet20	out-of-market	71.14%	70.56%
	FedAvg	70.35%	67.85%
	w/o alignment	78.31%	78.31%
	w alignment	79.90%	79.90%

Table 1: We add a new baseline test (FedAvg), which assumes that there is no broker involved in a trade to help agents align parameters and optimize their purchased weights. Results confirm the significance of having a trusted broker in parameter trading. Without an intermediary broker to facilitate the trade, the performance of purchased weights can be negatively impacted, as evidenced by the CIFAR10 + ResNet20 results.

		Agent <i>A</i>	Agent <i>B</i>	Agent <i>C</i>
		Testing Acc. (%)	Testing Acc. (%)	Testing Acc. (%)
MNIST + MLP	out-of-market	68.07%	73.79%	76.38%
	w alignment	82.29%	77.08%	77.08%
CIFAR10 + ResNet20	out-of-market	67.62%	74.99%	74.12%
	w alignment	79.53%	77.77%	76.80%
TinyImageNet + ResNet20	out-of-market	20.51%	17.99%	18.50%
	w alignment	32.62%	32.07%	31.08%

Table 2: We generalize our setting to involve more agents. In the three-agent market, results also follow expectations. The proposed parameter trading is able to help agents achieve higher accuracy performance compared to conventional model training without trading (out-of-market).

		Agent <i>A</i>	Agent <i>B</i>
		Testing Acc. (%)	Testing Acc. (%)
MNIST + MLP	out-of-market	68.50%	72.97%
	w alignment	88.78%	82.51%
CIFAR10 + ResNet20	out-of-market	71.14%	70.56%
	w alignment	78.41%	73.40%

Table 3: We conduct a new experiment on asynchronous parameter trading. Both agents are asked to train the model for 60 epochs in total. Agent *A* is instructed to delay trading. Results emphasizes the crucial role of brokers in aligning parameters and optimizing purchase weights to eliminate differences not only in synchronous but also in asynchronous parameter trading.