Automated hyperparameter optimization

Different algorithms

- **See the page: https://docs.aws.amazon.com/sagemaker/latest/dg/automatic-model-tuning-how-it-works.html**

- Grid Search

- Random Search

- Bayesian Search

- Hyperband

Notebook

- Run these notebooks in the myapps and in us-east-1 region
- Run the HPO-hpo_xgboost_direct_marketing_sagemaker_APIs notebook
- This notebook uses Bayesian search (**default**)

Assignment (Option 1)

- Run the notebook in the myapps and in us-east-1 region

- Add code to the notebook to do HPO by :
  - Using Grid Search and make sure you finish in less than 20 minutes
  - Using Random search in less that 20 minutes
  - Compare the results with Bayesian Search

- **If you have created an endpoint, do not forget to delete the endpoints**

Assignment (option 2)

- In the notebook we have a section called "**Analyze the correlation between objective metric and individual hyperparameters**"

- Over there we have shown some hyperparameters and how they change the objective metric.

- Pretend you are that HPO engine. Analyze those reports and add your analysis (hypothesis) to the existing notebook. You should have some hypothesis about what could be a better next hyperparameter value if there was another training job. Explain why you think those are the next hyperparameters.

- Create a new "training job" (**not HPO**) with new hyperparameters that you believe are better and analyze your theory.

Deliverable

- You need to upload the resulting notebooks in the BB.