A Large-scale Open Dataset for Bandit Algorithms

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Project's Goal and Components

We attempt to enable realistic and reproducible experiments on

- Bandit Algorithms
- Off-Policy Evaluation (OPE)

Open Bandit Dataset

& Open Bandit Pipeline

Open Bandit Dataset Features

- **over 25M records** collected by online experiments of bandit algorithms on a large-scale fashion e-commerce (*ZOZOTOWN*)
- **log data collected by multiple bandit policies**
- **true propensity scores and rich context vectors**

enabling realistic experiments on bandit algorithms and OPE

Open Bandit Pipeline Features

We implement a pipeline to streamline the experiments on bandit algorithms and off-policy evaluation

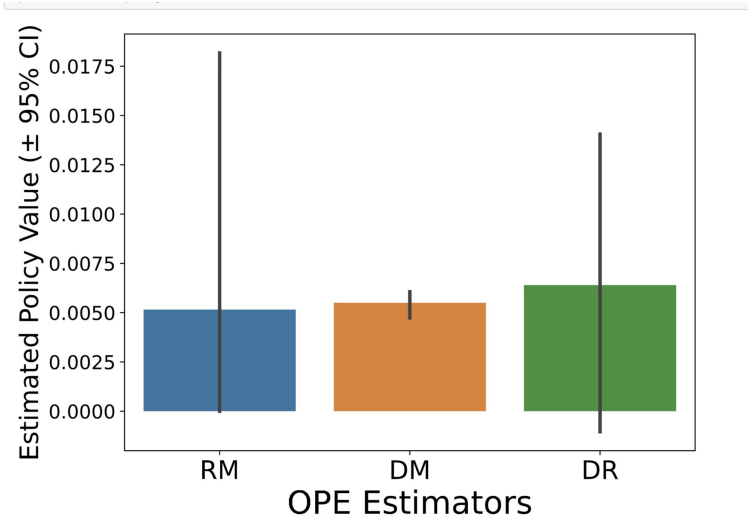
```python
# a case for implementing OPE of the BernoulliTS policy using log data generated by the Random policy
from obp.dataset import OpenBanditDataset
from obp.policy import BernoulliTS
from obp.simulator import run_bandit_simulation
from obp.ope import OffPolicyEvaluation, ReplayMethod

# (1) Data loading and preprocessing
dataset = OpenBanditDataset(behavior_policy='random', campaign='women')
bandit_feedback = dataset.obtain_batch_bandit_feedback()

# (2) Offline Bandit Simulation
counterfactual_policy = BernoulliTS(n_actions=dataset.n_actions, len_list=dataset.len_list)
selected_actions = run_bandit_simulation(bandit_feedback=bandit_feedback, policy=counterfactual_poli

# (3) Off-Policy Evaluation
ope = OffPolicyEvaluation(bandit_feedback=bandit_feedback, ope_estimators=[ReplayMethod()])
estimated_policy_value = ope.estimate_policy_values(selected_actions=selected_actions)

# estimated performance of BernoulliTS relative to the ground-truth performance of Random
relative_policy_value_of_bernoulli_ts = estimated_policy_value['rm'] / bandit_feedback['reward'].mea
print(relative_policy_value_of_bernoulli_ts) # 1.120574...
```



Thank you for Listening!

Email: saito.y.bj at m.titech.ac.jp

GitHub: https://github.com/st-tech/zr-obp

Full paper will be available on arXiv soon!