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Online Learning in a Contract Selection Problem

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In an online contract selection problem there is a seller which offers a set of contracts to sequentially arriving buyers whose types are drawn from an unknown distribution. If there exists a profitable contract for the buyer in the offered set, i.e., a contract with payoff higher than the payoff of not accepting any contracts, the buyer chooses the contract that maximizes its payoff. In this paper we consider the online contract selection problem to maximize the sellers profit. Assuming that a structural property called ordered preferences holds for the buyer's payoff function, we propose online learning algorithms that have sub-linear regret with respect to the best set of contracts given the distribution over the buyer's type. This problem has many applications including spectrum contracts, wireless service provider data plans and recommendation systems.

Subjects: **Learning (cs.LG)**; Computer Science and Game Theory (cs.GT); Optimization and Control (math.OC); Machine Learning (stat.ML)

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