

# Algorithms for Autobidding in Online Advertising

*Friday, September 27, 2024 10:30 AM (45 minutes)*

Online advertising has recently grown into a highly competitive and complex multi-billion-dollar industry, with advertisers bidding for ad slots at large scales and high frequencies. This has resulted in a growing need for efficient “auto-bidding” algorithms that determine the bids on behalf of advertisers for incoming queries to maximize advertisers’ objectives subject to their specified constraints. We consider the problem from the perspective of a single advertiser, and we focus on two of the most prevalent constraints in practice: Budget and Return-on-Spend (RoS). Technically, we take the approach of the primal-dual framework and first-order low-regret dynamics from online learning, and show how the problem-specific structures in “auto-bidding” can lead to simple online algorithms with provable performance guarantees.

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**Session Classification:** Morning Session