

# Real-Time Bidding: A New Frontier of Computational Advertising Research

## Tutorial Abstract

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### Categories and Subject Descriptors

H.3.5 [Information Storage and Retrieval]: Online Information Services—*Commercial services*

### General Terms

Algorithms, Measurement, Economics

### Keywords

Computational advertising; Real-time bidding; Bidding algorithms; Revenue optimisation; Datasets

### ABSTRACT

In display and mobile advertising, the most significant development in recent years is the Real-Time Bidding (RTB), which allows selling and buying in real-time one ad impression at a time. Since then, RTB has fundamentally changed the landscape of the digital marketing by scaling the buying process across a large number of available inventories. The demand for automation, integration and optimisation in RTB brings new research opportunities in the IR/DM/ML fields. However, despite its rapid growth and huge potential, many aspects of RTB remain unknown to the research community for many reasons. In this tutorial, together with invited distinguished speakers from online advertising industry, we aim to bring the insightful knowledge from the real-world systems to bridge the gaps and provide an overview of the fundamental infrastructure, algorithms, and technical and research challenges of this new frontier of computational advertising. We will also introduce to researchers the datasets, tools, and platforms which are publicly available thus they can get hands-on quickly.

### Presenter's Bios

**Dr. Jun Wang** is a Senior Lecturer (Associate Professor) in University College London. He has published over 70

research papers in leading journals and conference proceedings including ACM Trans. on Information Systems, IEEE Trans. on Multimedia, ACM Multimedia System Journal, WWW, CIKM, ACM SIGIR, SIGMM. He received the Best Doctoral Consortium award in ACM SIGIR06 for his work on collaborative filtering, the Best Paper Prize in ECIR09 for his work on applying Modern Portfolio Theory of Finance (Mean-variance Analysis) to document ranking in Information Retrieval, and the Best Paper Prize in ECIR12 for top-k retrieval modelling. He has extensive experiences in giving tutorials on top conferences: his recent tutorials about risk management and portfolio theory of information retrieval were given in CIKM2011 and ECIR2011. Dr. Jun Wang has also delivered the following tutorials:

- ECIR 2011, Risk Management in Information Retrieval.
- CIKM 2011, Statistical Information Retrieval Modelling: From Probability Ranking Principle to recent advances in diversity, Portfolio Theory, and beyond.
- SIGIR 2013, Dynamic IR Modelling.

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**Shuai Yuan** is completing his Ph.D. in University College London. He has been working on mathematical models of online advertising with a number of companies such as MediGamma, AppNexus, Advance International Media, Bright, Dot.tk, and Miaozen. He has the background of information retrieval, data mining, machine learning, and economic theories; his research interests on computational advertising have focused on supply side optimisation in RTB, bidding algorithms, and statistical arbitrage. Shuai Yuan has published several papers in top-tier venues including CIKM, SIGKDD, and ADKDD. Among them, he published the first empirical study on RTB auctions. He and his colleagues won the 3rd season of iPinyou Global Bidding Algorithm Competition in 2013, and the Best Paper Award of ADKDD 2014. He also contributes to an open advertising dataset project.

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