

The Quantitative Analysis of User Behavior Online – Data, Models and Algorithms

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By blending principles from mechanism design, algorithms, machine learning and massive distributed computing, the search industry has become good at optimizing monetization on sound scientific principles. This represents a successful and growing partnership between computer science and microeconomics. When it comes to understanding how online users respond to the content and experiences presented to them, we have more of a lacuna in the collaboration between computer science and certain social sciences. We will use a concrete technical example from image search results presentation, developing in the process some algorithmic and machine learning problems of interest in their own right. We then use this example to motivate the kinds of studies that need to grow between computer science and the social sciences; a critical element of this is the need to blend large-scale data analysis with smaller-scale eye-tracking and “individualized” lab studies.