On How Machine Learning and Auction Theory Power Facebook Advertising

ABSTRACT

With over 800 million daily active users and over 2 million advertisers, Facebook runs one of the world’s largest online advertising marketplaces. Advertisers can choose to bid and pay for ad impressions, for clicks, for conversions or for any combination. The ranking and pricing of ads depends on the predicted probability of clicks and conversions. In this talk we give a brief overview of the algorithmic problems underlying the Facebook ads auction. We share some lessons learnt from building the scalable machine learning platform we use to tackle the prediction problem, and discuss challenges in optimization and mechanism design.

JOAQUIN: Joaquin Quiñonero Candela is a Director of Engineering at Facebook, where he manages the Applied Machine Learning and the Advertising Optimization organizations. Joaquin is deeply passionate about enabling people to make an impact with machine learning. In the past he was a researcher at Microsoft Research in Cambridge UK, a postdoc at the Max Planck Institute in Tübingen and at the Fraunhofer Society in Berlin. Joaquin lives in Palo Alto, California, with his wife and three children. He is an avid paella cook and an obsessive long distance runner.

CHINMAY: Chinmay Karande is an Engineering Manager at Facebook, leading the Ads Delivery Product team. This team marries powerful algorithmic optimization mechanisms with a simple, accessible product experience for the advertisers – setting up a fair and rewarding marketplace for marketing activity. The team applies concepts from auction theory, algorithms and distributed systems to a diverse set of use cases. Chinmay completed his BTech in Computer Science & Engineering at IIT Bombay, and PhD in Algorithms, Combinatorics and Optimization at Georgia Tech. His focus area was algorithms and game theory. Thanks to beautiful west coast weather, Chinmay can play tennis all-year and is always up for a game.