Séminaire de Probabilités

Data Driven Estimation of Conditional Expectations, Application to Stochastic Optimization

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Description

Conditional expectations occur in the description of optimal solutions in a number of stochastic optimization problems as optimal stopping, reinforcement learning, stochastic optimal control etc. When the underlying conditional density is known, computations can be performed analytically or numerically. When, however, such knowledge is not possible and instead we are given a collection of (training) data, the goal of our presentation is to introduce simple and purely data-driven means for estimating directly the desired conditional expectation. Since in many stochastic optimization problems the optimal solution satisfies a system of equations involving conditional expectations, we develop a computational technique based on the proposed data-driven methodology which estimates these optimal functions.

SHORT-BIO: George V. Moustakides received the diploma in Electrical and Mechanical Engineering from the National Technical University of Athens, Greece, in 1979, the M.Sc in Systems Engineering from the Moore School of Electrical Engineering, University of Pennsylvania, Philadelphia, in 1980, and the PhD in Electrical Engineering and Computer Science from Princeton University, Princeton NJ, in 1983. In 2007 he joint the department of Electrical and Computer Engineering, University of Patras, Patras, Greece, where he is currently an Emeritus Professor. Prof. Moustakides held various long-term positions in the past: Junior and Senior Researcher with INRIA, France; Professor with the University of Thessaly, Greece and Long-Term Visiting Professor with Rutgers University. He has also been a Visiting Scholar and/or Adjunct Professor with Princeton University, University of Pennsylvania, Columbia University, University of Maryland, Georgia Institute of Technology, University of Southern California, University of Illinois at Urbana-Champaign, Rutgers University and Aalto University, Finland. During 2011-2014 he served as Associate Editor for Detection and Estimation and during 2016-2018 as (inaugural) Associate Editor for Sequential Methods for the IEEE Transactions on Information Theory. His interests include Sequential Detection, Statistical Signal Processing and Statistical Machine Learning.