Multivariate Bandits and their Applications

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Abstract: We will review the multi-armed bandit problem and its application to optimizing click-through for Web site banners. We will present multi-variate extensions to the basic bandit technology including the use of Gaussian Processes to model relations between different arms. This leads to the consideration of infinitely many arms as well as applications to grammar learning and optimization.

Bio-Sketch: John Shawe-Taylor obtained a PhD in Mathematics at Royal Holloway, University of London in 1986. He subsequently completed an MSc in the Foundations of Advanced Information Technology at Imperial College. He was promoted to Professor of Computing Science at Royal Holloway in 1996. He has published over 200 research papers and co-authored two books on the use of kernel methods in machine learning. He moved to the University of Southampton in 2003 to lead the ISIS research group. He was appointed the Director of the Centre for Computational Statistics and Machine Learning at University College, London in July 2006. This centre is promoting research at the intersection of theoretically well-founded machine learning and computational statistics, linking groups in the departments of Computer Science and Statistical Sciences with the Gatsby Computational Neuroscience Unit. He is the Scientific Coordinator of the PASCAL Network of Excellence linking over 50 groups in Europe and beyond promoting well-founded approaches and applications of machine learning.