



# Multivariate Bandits and their Applications

John Shawe-Taylor

► **To cite this version:**

John Shawe-Taylor. Multivariate Bandits and their Applications. Zhongzhi Shi; Sunil Vadera; Agnar Aamodt; David Leake. 6th IFIP TC 12 International Conference on Intelligent Information Processing (IIP), Oct 2010, Manchester, United Kingdom. Springer, IFIP Advances in Information and Communication Technology, AICT-340, pp.3-3, 2010, Intelligent Information Processing V. .

**HAL Id: hal-01055066**

**<https://hal.inria.fr/hal-01055066>**

Submitted on 11 Aug 2014

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

# Multivariate Bandits and their Applications

John Shawe-Taylor

Centre for Computational Statistics and Machine Learning  
University College, London, UK

**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.