SUBHOJYOTI MUKHERJEE

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RESEARCH INTERESTS

Broad Areas: Machine learning, Reinforcement learning.

Working On: Multi-armed bandits.

EDUCATION

Indian Institute of Technology Madras, Chennai, India January 2015–present
M.S, Computer Science Engineering
Guides: Prof. Balaraman Ravindran and Prof. Nandan Sudarsanam
CGPA: 8.4/10

Meghnad Saha Institute of Technology, Kolkata, India 2009–2013
Bachelor of Technology, Computer Science Engineering
CGPA: 8.42/10

PUBLICATIONS

1. Subhojyoti Mukherjee, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Thresholding Bandit with Augmented UCB*," accepted in the proceedings of IJCAI 2017.
2. Subhojyoti Mukherjee, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Efficient UCBV: An Almost Optimal Algorithm using Variance Estimates*," in preparation for AAAI 2018.

RESEARCH PROJECTS

Augmented UCB
Proposed the Augmented-UCB (AugUCB) algorithm for a fixed-budget version of the thresholding bandit problem (TBP), where the objective is to identify a set of arms whose quality is above a threshold. A key feature of AugUCB is that it uses both mean and variance estimates to eliminate arms that have been sufficiently explored. This is the first algorithm to employ such an approach for the considered TBP.

Efficient UCB-Variance
Presented a novel algorithm for the stochastic multi-armed bandit (MAB) problem. Our proposed Efficient UCB Variance method, referred to as EUCBV is an arm elimination algorithm based on UCB-Improved and UCBV strategy which takes into account the empirical variance of the arms and along with aggressive exploration factors eliminate sub-optimal arms. Through a theoretical analysis, we establish that EUCBV achieves a better gap-dependent regret upper bound than UCB-Improved, MOSS, UCB1, and UCBV algorithms. EUCBV enjoys an order optimal gap-independent regret bound same as that of OCUCB and MOSS, and better than UCB-Improved, UCB1 and UCBV.

Aggregation of Experts
We study a variant of multi-armed bandits where arms are non-stationary but predictable. The basic idea is to combine change-point detection algorithm with aggregation of expert strategies in order to define efficient pulling strategies in context of bandits with change of distributions. We focus on the guarantees of prediction

error for each arm derived from theory, and on the problem of learning adaptively a representation of signal from a practical point of view.

Research Internship

INRIA, SequeL Lab: Tentative research internship under Dr. Odalric Maillard in the INRIA Sequel Lab, Lille, France from 1st September, 2017 to 28th November, 2017 for a period of 3 months.

TEACHING EXPERIENCE

Teaching Assistant, IIT Madras January 2015–present
Assisted in preparing and conducting lab assignments and class tutorials for the following courses:
Introduction to Programming - Prof. Raghavendra Rao B. V.
Reinforcement Learning - Prof. Balaraman Ravindran
Compiler Design - Prof. Rupesh Nasre

WORK EXPERIENCE

Tata Consultancy Services Ltd., Kolkata, India March 2014–December 2014
Assistant System Engineer Trainee
Software development and test engineer in Digital Enterprise Service and Solution.

PROFESSIONAL ACTIVITIES

Reviewer Assisted Prof. Balaraman Ravindran in reviewing for IJCAI 2017.

RELEVANT COURSEWORK

Introduction to Machine Learning	Reinforcement Learning
Natural Language Processing	Linear Algebra and Random Processes
Multi-variate Data Analysis	Data Analysis for Research
Fundamentals of Experimentation for Management	

REFERENCES

Prof. Balaraman Ravindran
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Prof. Nandan Sudarsanam
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