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: 8.22/10

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

PUBLICATIONS

1. Subhojyoti Mukherjee, L.A. Prashanth, Nandan Sudarsanam, and Balaraman Ravindran, "*UCB with improved exploration and clustering*," under review in ICML 2017.
2. Subhojyoti Mukherjee, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Thresholding Bandit with Augmented UCB*," accepted in the proceedings of IJCAI 2017.
3. Subhojyoti Mukherjee, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Efficient UCBV: An Almost Optimal Algorithm using Variance Estimates*," under review for ECML 2017.

RESEARCH PROJECTS

Efficient Clustered UCB
Presented a novel algorithm for the stochastic multi-armed bandit (MAB) problem. Our proposed Efficient Clustered UCB method partitions the arms into clusters and then follows the UCB-Improved strategy with aggressive exploration factors to eliminate sub-optimal arms, as well as entire clusters. Through a theoretical analysis, we establish that our method achieves a better gap-dependent regret upper bound than UCB-Improved and MOSS algorithms.

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.

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

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Prof. Nandan Sudarsanam
Assistant Professor
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Department of Management Studies
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