SUBHOJYOTI MUKHERJEE

RISE lab
Department of Computer Science & Engineering
Indian Institute of Technology Madras
Chennai, India 600036

Phone: +91 97486 83510
Email: `subho@cse.iitm.ac.in`,
`subhojyotimukherjee22@gmail.com`
Website: https://subhojyoti.github.io/

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: Dr. Balaraman Ravindran and Dr. Nandan Sudarsanam
CGPA: 8.40/10

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*", *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence (IJCAI-17)*, main conference track.

2. Subhojyoti Mukherjee, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Efficient UCBV: An Almost Optimal Algorithm using Variance Estimates*", *To appear in Proceedings of the Thirty-Second Association for the Advancement of Artificial Intelligence (AAAI-18)*, main conference track.

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 ag-

gregation 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: 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.

Adobe Research, San Jose: Tentative research internship under Dr. Branislav Kveton in the Adobe Research, San Jose, USA from 22nd January, 2018 to 20th April, 2018 for a period of 3 months.

Collaborators

- Dr. Balaraman Ravindran, CSE Department, IIT Madras
- Dr. Nandan Sudarsanam, Department of Management Science, IIT Madras
- Dr. K.P. Naveen, Deprtment of Electrical Engineering, IIT Tiruapti
- Dr. Odalric-Ambrym Maillard, INRIA, SequeL Lab, Lille, France
- Dr. Branislav Kveton, Adobe Research, San Jose, USA

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 Dr. 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

OTHER ACHIEVEMENTS

Scored 314/340 in Graduate Record Examinations **(GRE)** 2017.
Scored 111/120 in Test of English as a Foreign Language **(TOEFL)** 2017.
Ranked 1150/155190 candidates in Graduate Aptitude Test in Engineering **(GATE)** 2014.
Secured 98.93 percentile in Common Admission Test **(CAT)** 2014 among 196988 candidates.

REFERENCES

Dr. Balaraman Ravindran
Associate Professor
ravi@cse.iitm.ac.in
Department of Computer Science & Engg.
Indian Institute of Technology Madras

Dr. K.P. Naveen
Assistant Professor
naveenkp@iittp.ac.in
Department of Electrical Engg.
Indian Institute of Technology Tirupati

Dr. Nandan Sudarsanam
Assistant Professor
nandan@iitm.ac.in
Department of Management Studies
Indian Institute of Technology Madras

Dr. Odalric Maillard
INRIA Researcher (CR1)
odalricambrym.maillard @ inria.fr
SequeL Team
INRIA Lille, France