Symposium on
LEARNING ALGORITHMS AND COMPLEXITY
(January 05 - 09, 2015)

NATIONAL MATHEMATICS INITIATIVE (NMI)
Indian Institute of Science, Bangalore

Venue: Biological Sciences Auditorium, New Biological Sciences Building, IISc Bangalore

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Programme Schedule

January 05, 2015
(Monday)

08:00 - 08:55	Registration
08:55 - 09:00	**Address by Professor Govindan Rangarajan, NMI Convener**
09:00 - 10:30	The Online Approach to Machine Learning *Nicolo Cesa-Bianchi, University of Milan*
10:30 - 11:00	**Coffee Break**
11:00 - 11:45	Optimization on Noisy Data: Statistical Accuracy vs. Numerical Precision *Sham Kakade, Microsoft Research New England*
11:45 - 12:30	Machine Learning and Crowdsourcing *Adam Kalai, Microsoft Research New England*
12:30 - 14:00	**Lunch**
14:00 - 15:30	The Geometry of Machine Learning Problems *Robert C. Williamson, Australian National University*
15:30 - 16:00	**Coffee Break**
16:00 - 16:45	Universal Consistency of Nearest Neighbor in Metric Spaces, and Rates of Convergence *Sanjoy Dasgupta, University of California, San Diego*
16:45 - 17:30	Statistical Learning in Complex Prediction Spaces: What Do We Know? *Shivani Agarwal, Indian Institute of Science*

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January 06, 2015
(Tuesday)

09:00 - 10:30   The Complexity of Unsupervised Learning
                                Santosh Vempala, Georgia Institute of Technology

10:30 - 11:00   **Coffee Break**

11:00 - 11:45   Algorithmic Game Theory and Machine Learning
                                 Constantinos Daskalakis, Massachusetts Institute of Technology

11:45 - 12:30   Simple, Efficient and Neural Algorithms for Sparse Coding
                                Ankur Moitra, Massachusetts Institute of Technology

12:30 - 14:00   **Lunch**

          IG Sarma - Infosys Foundation Lecture (Faculty Hall)

16:00 - 17:00   The Quest for Resilient Mechanism Design
                                Silvio Micali, Massachusetts Institute of Technology

17:30 - 18:30   *Poster Session (Faculty hall)*

- Temporally Coherent CRP: A Bayesian Non-Parametric Approach for Clustering Tracklets with applications to Person Discovery in Videos
  Adway Mitra, Indian Institute of Science

- An Economic Interpretation of Edmond's Blossom Algorithm
  Anudhyan Boral, Harvard University

- GEV-Canonical Regression for Accurate Binary Class Probability Estimation when One Class is Rare
  Arpit Agarwal, Indian Institute of Science

- Ranking from Pairwise Comparisons: The Role of the Pairwise Preference Matrix
  Arun Rajkumar, Indian Institute of Science

- A generalized reduced linear program for Markov decision processes
  Chandrasekhar Lakshmi Narayanan, Indian Institute of Science

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- Sampling Correctors
  Clément Canonne, Columbia University

- Hardness of Coloring
  Girish Varma, Tata Institute of Fundamental Research

- Online and Stochastic Gradient Methods for Non-decomposable Loss Functions
  Harikrishna Narasimhan, Indian Institute of Science

- Convex Calibrated Surrogates for Low-Rank Loss Matrices with Applications to Subset Ranking Losses
  Harish G. Ramaswamy, Indian Institute of Science

- Mining Block I/O Traces for Cache Preloading with Sparse Temporal Non-parametric Mixture of Multivariate Poisson
  Lavanya Sita Tekumalla, Indian Institute of Science

- Sampling Complexity for Winner Determination in Voting
  Palash Dey, Indian Institute of Science

- On the Statistical Consistency of Plug-in Classifiers for Non-decomposable Performance Measures
  Rohit Vaish, Indian Institute of Science

- An Optimal Bidimensional Multi-Armed Bandit Auction for Multi-unit Procurement
  Satyanath Bhat, Indian Institute of Science

- Incremental Algorithm for Maintaining DFS Tree for Undirected Graphs
  Shahbaz Khan, Indian Institute of Technology Kanpur

- Seed node selection for community discovery in social networks
  Shilpa Garg, Max Planck Institut Informatik

- Improved Expected Runtime for MDP Planning
  Shivaram Kalyanakrishnan, Indian Institute of Science

- An Incentive Compatible Multi-Armed-Bandit Crowdsourcing Mechanism with Quality Assurance
  Shweta Jain, Indian Institute of Science

- A Provable SVD-based Algorithm for Learning Topics in Dominant Admixture Corpus
  Trapit Bansal, Indian Institute of Science

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January 07, 2015
(Wednesday)

09:00 - 09:45   Efficient Rare Event Simulation Algorithms for Heavy Tailed
Processes
Sandeep Juneja, Tata Institute of Fundamental Research

09:45 - 10:30   Aggregating Information from the Crowd
Anirban Dasgupta, Indian Institute of Technology Gandhinagar

10:30 - 11:00   **Coffee Break**

11:00 - 11:45   Algebraic Property Testing
Arnab Bhattacharyya, Indian Institute of Science

12:00 - 13:30   **Lunch**

[Joint sessions with ICTS Turing Lectures]

13:55 - 14:00   **Address by Spenta Wadia, ICTS Director**

14:00 - 14:45   Overcoming Computational Intractability in Unsupervised Learning
Sanjeev Arora, Princeton University

14:45 - 15:30   The Contextual Bandits Problem: A New Fast and Simple Algorithm
Robert Schapire, Microsoft Research & Princeton University

15:30 - 16:00   **Coffee Break**

16:00 - 16:45   Versatility of Singular Value Decomposition
Ravi Kannan, Microsoft Research India and Indian Institute of Science

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January 08, 2015 (Thursday)	*[Joint sessions with Microsoft Research India Theory Day]*
09:30 - 10:30	The Surprising Power of Belief Propagation *Elchanan Mossel, University of California, Berkeley*
10:30 - 11:00	**Coffee Break**
11:00 - 12:00	Testing and Correction of Distributions *Ronitt Rubinfeld, Massachusetts Institute of Technology and Tel Aviv University*
12:30 - 14:00	**Lunch**
14:00 - 15:00	Two Random Walks that Surprise Ashish Goel, Stanford University
15:00 - 15:30	**Coffee Break**
15:30 - 16:30	Learning from Satisfying Assignments *Rocco Servedio, Columbia University*

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January 09, 2015
(Friday)

09:00 - 09:45	Provable Submodular Minimization via Wolfe's Algorithm *Deeparnab Chakrabarty, Microsoft Research India*
09:45 - 10:30	Non-convex Projection Based Approaches for High-dimensional Learning *Prateek Jain, Microsoft Research India*
10:30 - 11:00	**Coffee Break**
11:00 - 11:45	Algorithms for Independent Component Analysis *Navin Goyal, Microsoft Research India*
11:45 - 12:30	Pairwise Spanners *Kavitha Telikepalli, Tata Institute of Fundamental Research*
12:30 - 14:00	**Lunch**
14:00 - 15:30	Algebraic Complexity Theory *Manindra Agrawal, Indian Institute of Technology Kanpur*
15:30 - 16:00	**Coffee Break**
16:00 - 16:45	Arithmetic Circuits: from Lower Bounds to Learning and Back *Neeraj Kayal, Microsoft Research India*
16:45 - 17:30	Lower Bounds for small depth arithmetic circuits *Chandan Saha, Indian Institute of Science*