Ayan Acharya

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Research Interests

Data Mining (Clustering, Co-clustering, Consensus Clustering, Privacy-preserving data exploration), Machine Learning (Transfer Learning, Semi-supervised learning, Generative models), Computer Vision.

Education

- **Ph.D.**, Electrical and Computer Engineering (Specialization: Data Mining & Machine Learning)
  University of Texas at Austin, Austin, TX 78712 **GPA 3.91** Aug 2009-May 2014(expected)
- **Bachelor of Engineering**, Electronics and Telecommunication Engineering
  Jadavpur University, Kolkata, India **GPA 9.10(/10)** Aug 2005-Jun 2009

Technical Expertise

- Engineering Software and Languages: Matlab, Python, SAS, R.
- Computer Programming Languages and Tools: C, C++, Java, Scala, Apache Maven, HTML, Bash, MySQL.
- Operating Systems: Windows, LINUX/UNIX, Android.
- Typography: LaTeX, Microsoft Office.

Course Works in Graduate Level

Probability and Stochastic Process I; Machine Learning; Real Analysis I; Data Mining; Sparsity, Structure and Algorithms; Introduction to Mathematical Statistics; Bayesian Statistical Methods; Optimization of Engineering Systems; Computational Statistics Applied to Bio-informatics; Advanced Data Mining; Convex Optimization; Natural Language Processing.

Internship Exposure

- Real time collision avoidance system in car based on monocular camera vision in Office of the Chief Scientist, Qualcomm Inc.
- Enhancement of product category classification in eBay Research Labs (Summer'11, Supervisor: Dr. Neel Sundaresan).

Teaching Assistantship Experience

- EE313: Signals and Systems under Dr. Jeff Andrews (Fall 2009).
- EE312: Introduction to Programming under Dr. Herb Krasner (Spring 2010).

Graduate Level Research Experience (Supervisors: Dr. Joydeep Ghosh & Dr. Raymond J. Mooney)

Transfer Learning with Visible and Latent Attributes: In this project, the objective is to improve transfer learning capability of a system using semantic, hidden and the original attributes of texts (word-unigrams) and images (RGB histograms, PHOG, rgSIFT). The adopted routes for solving these problems are latent structural SVM, probabilistic generative models and neural networks.

Differential Privacy in Recommender Systems: The goal is to design a differentially private recommender system. The system might be of the types user-to-item, item-to-item or user-to-user.

Improving classification from classifier ensemble and clustering ensemble: This work aims at building a more consolidated classification from a classifier ensemble and a clustering ensemble. At the core of the mathematical formulation, there is a non-convex function that is optimized using a new algorithm which, in principle, is similar to block co-ordinate descent type algorithm.

Sparse generative model for analysis of market basket data: The project deals with creating a sparse generative model for analysis of market basket data where each basket contains only a small subset of the different items available. The theory draws inspiration from Latent Dirichlet Allocation (LDA), Hierarchical Dirichlet Process (HDP) and Sparse Topic Model (STM) where Dirichlet distribution, with some specific choice of its hyperparameters, facilitates sparse modeling in text analysis.

Customer segmentation, churn modeling and predictive modeling of smartphone customers: For a South Korea based telecommunication company.

Research Publication in Graduate Level

- **Journal**
  1. **Ayan Acharya**, E. R. Hruschka, Joydeep Ghosh, and Sreangsu Acharyya. **An Optimization Framework for Semi-Supervised and Transfer Learning using Multiple Classifiers and Clusterers** (submitted to ACM Transactions on Knowledge Discovery from Data).
  2. Joydeep Ghosh, **Ayan Acharya**. **Cluster Ensembles**, WIREs Data Mining and Knowledge Discovery: 1(4), July/Aug 2011, pp. 305-315.
- **Conference**
  1. **Ayan Acharya**, Aditya Rawal, Raymond Mooney and E. R. Hruschka, **Using both Supervised and Latent Shared Topics in Multi-task Learning** (submitted to SDM 2013).
  2. **Ayan Acharya**, Jangwon Lee, An Chen, **Real Time Car Detection and Tracking in Mobile Devices** (submitted to ICCVE 2013).
  3. **Ayan Acharya**, E. R. Hruschka and Joydeep Ghosh, **A Privacy-Aware Bayesian Approach for Combining Classifier and Cluster Ensembles**. In Proceedings of 3rd IEEE International Conference on Information Privacy, Security, Risk and Trust, MIT, Boston, USA (PASSAT 2011) (Acceptance Rate: 8%).
- **Workshop**
  1. **Ayan Acharya**, E. R. Hruschka, Joydeep Ghosh, and Sreangsu Acharyya, **Transfer Learning with Cluster Ensembles**. In proceedings of ICML 2011 Workshop on Unsupervised and Transfer Learning, pp. 123–132, 2012.
  2. **Ayan Acharya**, E. R. Hruschka, Joydeep Ghosh, and Sreangsu Acharyya, **C^{3}E: A Framework for Combining Ensembles of Classifiers and Clusterers**. In 10th International Workshop on Multiple Classifier System, 2011, LNCS 6713, pp. 269–278. Springer, Heidelberg.

Selected Research Publication in Under Graduate Level

- **Artificial Intelligence and Computer Vision**
  - **Journal**
    1. **Ayan Acharya**, Koushik Chattopadhyay, Deepyaman Maiti, Aritra Banerjee, Amit Konar. **Novel and Improved Methods of Regular Geometric Shape Recognition from Digital Image using Artificial Ants**, In vol. 1, no. 4, 2008 in International Journal of Intelligent Defense Support Systems (IJIDSS)-Inderscience, pp. 355-376.
    2. Deepyaman Maiti, Mithun Chakraborty, **Ayan Acharya**, Amit Konar, **A partly deterministic and partly stochastic scheme for the identification of fractional-order processes**, In vol. 1, issue 3, 2009 in International Journal of Advanced Intelligent Paradigm, pp. 332-357.
    3. **Ayan Acharya**, Aritra Banerjee, Amit Konar, Lakhmi C. Jain. **Extension of Ant System Algorithms with Exponential Deposition Rules for Improved Performance**, In vol. 1, no. 4, 2008 in International Journal of Intelligent Defense Support Systems (IJIDSS)-Inderscience, pp. 319-354.
- **AI Applications in Wireless Sensor Network**
  - **Journal**
    1. Anand Seetharam, **Ayan Acharya**, Abhishek Bhattacharyya, M.K.Naskar. **An Energy Efficient Data Gathering Protocol for Wireless Sensor Networks**, In Journal of Applied Computer Science, ISSN: 1843-1046, no. 1(2), 2008, Suceava, Romania, pp. 30-34.