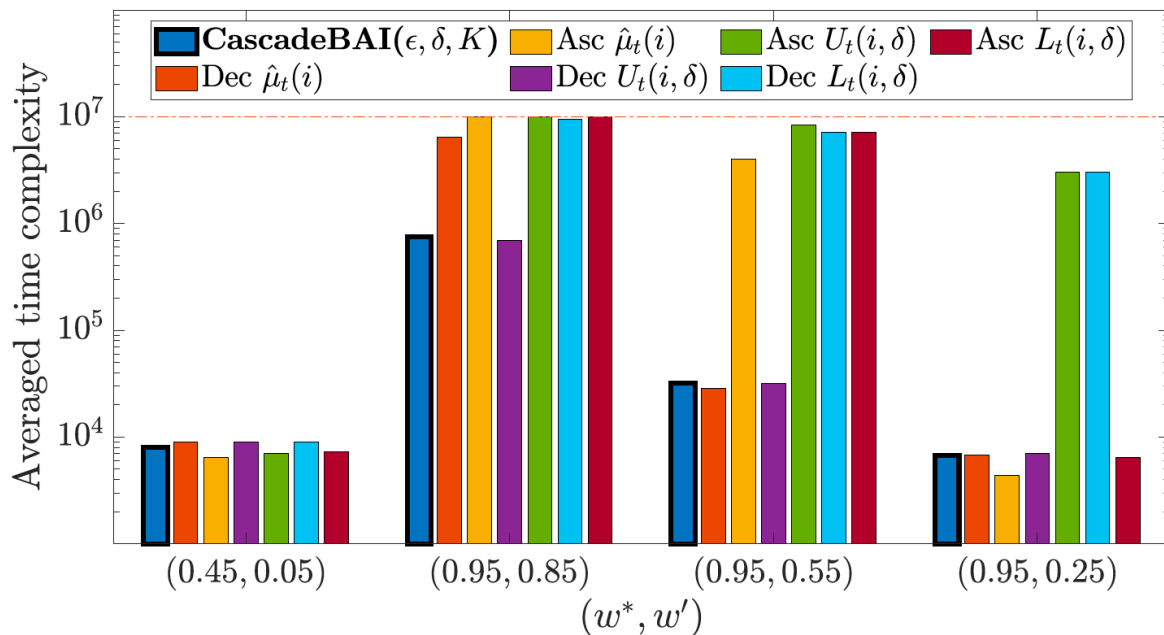


Research Highlight:

Identifying the Best List of Items under the Cascading Bandits Model

Work of Zixin Zhong (Math), Wang Chi Cheung (ISEM), Vincent Tan (Math, ECE)

Consider a recommendation system (like Amazon or Yelp) that provides a ranked list of items (e.g., books or restaurants) to a particular customer. Which list should be chosen at each point in time to maximize the customer’s satisfaction? In this work, we study the cascading bandits model, a model that has gain traction due to its applicability in real-life recommendation systems. In this model, each has a certain click probability which is unknown to the recommendation system, attracts the customer independently of other items. Under this assumption, the optimal solution is the list of items with largest click probabilities. We design and analyze CascadeBAI, an efficient online algorithm that provably outputs the best list of items in as short a time as possible given a fixed failure probability. Simulation results corroborate our findings. This paper was published at the 2020 International Conference on Machine Learning (ICML) and it can be found here.



References:

1. Z. Zhong, W.C. Cheung, V.Y.F. Tan, “Best Arm Identification for Cascading Bandits in the Fixed Confidence Setting”. Proceedings of the 37th International Conference on Machine Learning, (2020): PMLR 119:11481 – 11491.
2. <http://proceedings.mlr.press/v119/zhong20a.html>