Writing ML Papers

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Abstract

A good form for the abstract to follow is:

1. Problem
2. Current Solution
3. Problems with current solution
4. What our approach is to the problem
5. How it corrects the problems
6. Brief description of results
7. Summary of the rest of the paper (landmarks)

Here's an example of a good abstract, recommended in (Lipton 2018). The abstract is from (Dasgupta 1999).

> Mixtures of Gaussians are among the most fundamental and widely used statistical models. Current techniques for learning such mixtures from data are local search heuristics with weak performance guarantees. We present the first provably correct algorithm for learning a mixture of Gaussians. The algorithm is very simple and returns the true centers of the Gaussians to within the precision specified by the user, with high probability. It runs in time only linear in the dimension of the data and polynomial in the number of Gaussians.

This abstract follows the form above. We can break every sentence down into the point it covers.

> **(1)** Mixtures of Gaussians are among the most fundamental and widely used statistical models. **(2,3)** Current techniques for learning such mixtures from data are local search heuristics with weak performance guarantees. **(4)** We present the first provably correct algorithm for learning a mixture of Gaussians. **(5)** The algorithm is very simple and returns the true centers of the Gaussians to within the precision specified by the user, with high probability. **(6,7)** It runs in time only linear in the dimension of the data and polynomial in the number of Gaussians.

1 Introduction

2 Experiments

References

Bushman, Frederic D. (2012). "Improving your scientific writing: a short guide". In:

Dasgupta, Sanjoy (1999). "Learning Mixtures of Gaussians". In: FOCS '99. USA: IEEE Computer Society, p. 634. ISBN: 0769504094.

Lipton, Zachary C. (2018). "Heuristics for Scientific Writing (a Machine Learning Perspective)". In: *Approximately Correct*.