Notes on Stochastic Approximation

In order to say anything useful theoretically about our stochastic approximation algorithm, I expect to need some theoretical understanding of our tail index estimator. To this end, I have found multiple papers cataloging estimators of the Pareto tail index (Gomes and Guillou, 2015; Fedotenkov, 2020); the latter of which gives over 100 examples. Of note for later, Section 10 of Fedotenkov (2020) discusses a class of estimators which may be of particular interest for our purposes. Furthermore, Gomes and Guillou (2015) gives a nice framing of the theoretical considerations for extreme value theory, and Section 13 of Fedotenkov (2020) gives an extensive, albeit simple, Monte Carlo study.

References

Fedotenkov, I. (2020). A review of more than one hundred Pareto-tail index estimators. *Statistica*, 80(3).

Gomes, M. I. and Guillou, A. (2015). Extreme value theory and statistics of univariate extremes: a review. *International Statistical Review*, 83(2).