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[Home](#)

[Short Bio](#)

[Vita](#)

[Academic Tree](#)

[Research](#)

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[Publications](#)

[Students](#)

[Courses](#)

---

[MS&E121](#)

[MS&E321](#)

[MS&E322](#)

[MS&E323](#)

## The Cross-Entropy Method for Estimation

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*D. P. Kroese, R. Y. Rubinstein, and P. W. Glynn*

*Handbook of Statistics, Vol. 31, Eds. V. Govindaraju and C. R. Rao, Elsevier*

- [KroeseRubinsteinG13.pdf](#)

This chapter describes how difficult statistical estimation problems can often be solved efficiently by means of the cross-entropy (CE) method. The CE method can be viewed as an adaptive importance sampling procedure that uses the cross-entropy or Kullback-Leibler divergence as a measure of closeness between two sampling distributions. The CE method is particularly useful for the estimation of rare-event probabilities. The method can also be used to solve a diverse range of optimization problems. The optimization setting is described in detail in the chapter entitled “The Cross-Entropy Method for Optimization”.