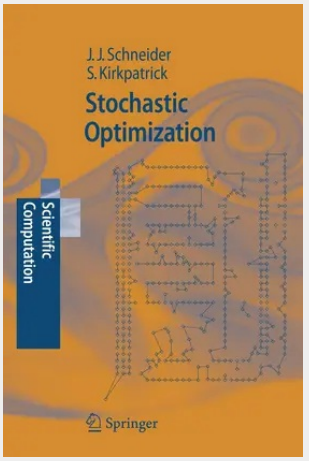
Schneider / Kirkpatrick

Stochastic Optimization

Our purpose in writing this book was to provide a compendium of stochastic optimizationtechniques,someguidesto wheneachisappropriateinpractical situations, and a few useful ways of thinking about optimization as a p- cess of search in some very rich con?guration spaces. Each of us has come to optimization, traditionally a subject studied in applied mathematics, from a background in physics, especially the statistical physics of random m- tures or materials. One of us (SK) has used ideas developed in the study of magnetic alloys to explore the optimal placement of computer circuits s- ject to many con?icting constraints, while at IBM Research, in Yorktown Heights, NY. The other (JJS) while completing his studies in physics under Prof. Ingo Morgenstern in Regensburg, Germany, and working at the IBM Scienti?c Center Heidelberg, was exposed to optimization problems as varied as scheduling the pickup of fresh milk and planning automobile assembly line schedules. We had the opportunity to work together after SK moved from IBM to a professorship at The Hebrew University of Jerusalem, Israel, and JJS was, for a year, a postdoc there. JJS has taught a course on stochastic optimization at the University of Mainz, where his students have used p- tions of the present manuscript. We hope to make this material readable by undergraduates, and useful to graduate students and practitioners as well, in computer science, applied mathematics, physics, and economics. Mainz, April 2006 JohannesJosefSchneider Jerusalem, April 2006 ScottKirkpatrick Contents Part I Theory Overview of Stochastic Optimization Algorithms 0 General Remarks.

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