Part 1

Odds-strategy, Odds algorithm, and Applications

Abstract: The odds-strategy solves a certain class of sequential decision problems. Although, as we will show, the result needs only elementary tools, it is remarkable in several aspects. Indeed, the corresponding solution algorithm (odds-algorithm) has the property that it yields the optimal strategy and optimal value simultaneously, and that it is optimal itself, that is, no other solution algorithm can do this more quickly. We look at possible generalizations and discuss various applications.

Part 2

On a Class of Optimal Stopping Problems with Mixed Constraints

Abstract: Suppose we can observe sequentially a fixed number $n$ of positive i.i.d. random variables. Their values are interpreted as costs. We must accept a certain number $r$ of them and we should accept $\text{expected cost}$ at least $m$ of them. The goal is to minimize the total expected cost. This is what we call a "mixed-constraint" stopping problem. We will show how the mixed constraints split naturally into a hierarchy of constraints and propose a solution. (The motivation comes from a question posed by David Aldous in connection with limiting constants for spanning trees.)