

考虑切换损失的多目标搜索策略

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摘 要: 考虑在固定区域内进行多目标搜索的问题, 搜索策略的性能不仅与观测次数、判决正确率有关, 也会受切换观测区域时切换损失的影响. 对此提出一种基于主动假设检验模型的多目标搜索策略, 它能帮助决策者在很少的切换开销下快速找到所有目标. 理论证明了所提策略可渐进最小化搜索的贝叶斯风险, 且仿真表明在有限时间内, 其性能也优于其他的对比算法. 该策略可扩展至异常检测、欺诈扫描等多个应用领域.

关键词: 主动假设检验; 切换损失; 目标搜索

Multi-target search with switching cost

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Abstract: The problem that detecting multiple targets among a finite number of regions is considered. The performance of the search strategy is not only related to the number of observations and the detection error, but also costs associated with switching across regions. We propose a multi-target search strategy based on the active hypothesis testing, which can help decision makers find all targets quickly with little switching cost. It's proved that the policy is asymptotically optimal. Meanwhile, which offers better performance in finite regime by simulations. Our policy can also be applied to anomaly detection, fraud detection and other read-world scenarios.

Key words: active hypothesis testing; switching cost; target search

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