# A Class of Best–Choice Problems on Sequences of Continuous Bivariate Random Variables*

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**Abstract**

An employer interviews a finite number $n$ of applicants for a position. They are interviewed one by one sequentially in random order. As each applicant $i$ is interviewed, two attributes are evaluated by the amounts $X_i$ and $Y_i$, where $X_i$'s and $Y_i$'s are not necessarily mutually independent, but $\{(X_i, Y_i)\}_{i=1}^n$ is iid sequence of continuous bivariate random variables and the common distribution of $(X_i, Y_i)$'s is known. Suppose that the employer is under the condition of full-information secretary problem without recall. We consider two kinds of the employer's objective and for each of the objectives the problems are formulated by dynamic programming and the optimal policy is explicitly derived.

## 1 Introduction

The present study is a continuation of the previous work by Sakaguchi and Szajowski[6]. An employer interviews a finite number of applicants for a position. They are interviewed one by one sequentially in random order. Each applicant has two attributes $X_i$ and $Y_i$, which are not necessarily independent. The employer observes $(X_i, Y_i)$ sequentially one by one, as each applicant appears, and he must choose (=stop at) one applicant without recall (*i.e.* if applicant is once not chosen, she is rejected and cannot be recalled later).

Let $\tau$ be the stopping time. Then the objective of the employer is to find the stopping rule which derive $\tau^*$ such that

$$(1^\circ) \qquad E\left[X_\tau I(Y_\tau \geq a)\right] \longrightarrow \max_\tau$$

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