Abstract—A genetic algorithm (GA) is widely used to solve many optimization problems. It does not promise accurate results but provides an acceptable one in various practical applications. Sometimes, it is trapped at a premature convergence or a local optimum for a complex problem. Hence, a Human-Like Constrained-Mating Genetic Algorithm (HLCMGA) is proposed in this paper to tackle such a problem. HLCMGA can be simply described as a crossover with human-like constrained mating to improve exploration ability. Computer simulation on ten benchmark multi-modal functions shows that it performs better than the simple GA (SGA). Compared to a state-of-the-art Rao algorithm on five benchmark functions, it reaches the same performances on the four functions and just loses on one function. The simulation also informs that it has a higher exploration ability to converge at the global optimum on various complex search spaces.

Index Terms—Genetic Algorithm, exploration, premature convergence, parent selection, constrained-mating crossover