

## Systematic Review of the Stable Matching Problem

Rodrigo Rigoberto Moreno<sup>1</sup>, Mario Gerardo Moreno<sup>2</sup>, and Simón Rodrigo Moreno<sup>1</sup>

<sup>1</sup>ESPOCH, Ecuador

<sup>2</sup>EPN, Ecuador

Corresponding author's Email: [rrmp@hotmail.es](mailto:rrmp@hotmail.es)

**Abstract:** The Stable Matching Problem SMP was originated in 1962 by two economist mathematicians, David Gale and Lloyd Shapley when the question was asked: could you design an admission process for university or for labor recruitment, which is self-executing? This problem tries to find a correspondence between two sets of elements with equal size, with the characteristic of having given preferences for each element. It is said that a match is not stable if:

1. There is an element of A of the first set that prefers a particular element of B over the element to which A is already paired.
2. B also prefers A over the element to which B is already paired

The Stable Matching Problem is an algorithm that helps stability by making matches that dictate a preference in the most impartial way possible. The Stable Matching Problem involves making a series of iterations that would have a complexity of  $n^2$ . The result obtained from the use of the Stable Matching Problem, is not necessarily optimal from the point of view of individuals.

*Keywords:* Pairing, set, marriage