Prediction of horizontal peak ground and spectral accelerations using genetic and imperialist competitive algorithms

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Abstract

This paper is aimed at presenting two new methods on the basis of genetic and imperialist competitive algorithms to predict horizontal peak ground and spectral accelerations. The proposed methods employ the optimization capabilities of genetic and imperialist competitive algorithms to determine the coefficients of attenuation relationships of peak ground and spectral accelerations. These methods have been applied to an ensemble earthquake record of two seismic zones, namely Zagros and Alborz-Central Iran. The obtained results clearly reveal that imperialist competitive algorithm can be viewed as a powerful and reliable tool for solving complex optimization problems such as attenuation relationship.

Keywords: attenuation relationship; genetic algorithm; imperialist competitive algorithm; peak ground acceleration; spectral acceleration

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