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Optimal control analysis of an unemployment model with an online freelancing intervention

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Author:

Oumaima AARABATE¹

¹ *Laboratory of fundamental mathematics and their applications, Faculty of sciences, University of Chouaib Doukkali, El Jadida, Morocco*

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Abstract

In the digital age, freelancing on the Internet has become a popular trend as an alternative to traditional employment and has an enormous impact. The purpose of this study is to investigate the relationship between unemployment and online freelancing. Thus, online freelancing can generate jobs in developing nations. So we suggested a mathematical model that describes the dynamics of the unemployment problem with an online freelancing intervention. Based on the model, an optimal control problem is suggested and many sensible and appropriate control strategies are proposed. The optimal controls are characterised by Pontryagin's minimum principle, and an iterative method is employed to solve the optimality system. Finally, some numerical simulations are run using Matlab to confirm the theoretical analysis.

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