

A SURVEY ON MACHINE LEARNING APPROACHES FOR NATURAL DISASTER MANAGEMENT SYSTEM

Dai Quoc Tran, Minsoo Park, Seunghee Park

*School of Civil, Architectural and Environmental System Engineering, Sungkyunkwan
University¹*

daitran@skku.edu, pmskku@naver.com, shparkpc@skku.edu

Vu Tuan Tran, Dae-Kyo Jung

Department of Convergence Engineering for Future City, Sungkyunkwan University²

vu56cd2@gmail.com, jdaekyo@naver.com

Abstract

The impact of climate change on natural disasters is one of the greatest challenges facing humanity, detecting and correctly predicting these phenomenon is a challenging problem over the years. Besides, preliminaries machine learning (ML) turns out to become the trend of the solution for this obstacle. This research reviews the prevailing data-driven approaches used in detecting and predicting wildfire or extreme weather (coldwave, heatwave), including those methods for detection (artificial neural network, deep convolutional neural network) and those techniques for prediction (machine learning algorithms, reinforcement learning, quantum computing). As the contribution, the conclusion in this review provides the framework for using machine learning, deep learning algorithm in developing the proposed smart natural disaster management system. All these will be useful to establish a better long-term strategy for a smart city.

Keywords: Natural disaster response, Machine learning, Deep learning

¹ South Korea

² South Korea