عنوان مقاله:

Application of Support Vector Machine and Gene Expression Programming on Tropospheric ozone Prognosticating for TehranMetropolitan

محل انتشار:

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خلاصه مقاله:

Air pollution became fatal issue for humanity and all environment and developed countries unanimously allocated vastinvestments on monitoring and researches about air pollutants. Soft computing as a novel way for pollutants prediction canbe used for measurement tools calibration which can coincidently decrease the expenditures and enhance their ability toadapt quickly. In this paper support vector machine (SVM) and gene expression programming (GEP) as two powerfulapproaches with reliable results in previous studies, used to predict tropospheric ozone in Tehran metropolitan by usingthe photochemical precursors and meteorological parameters as predictors. In a comparison between the two approaches,the best model of SVM gave superior results as it depicted the RMSE= 0.0774 and R= 0.8459 while these results of geneexpression programming, respectively, are 0.0883 and 0.7938. Sensitivity of O3 against photochemical precursors andmeteorological parameters and also for every input parameter, has been analysed discreetly and the gained results implythat PM2.5, PM10, temperature, CO and NO2 are the most effective parameters for O3 values tolerances. For SVM, severalkernel tricks used and the best appropriate kernel selected due to its result. Nonetheless, gamma and sin2 values varied forevery kernel and in the last radial basis function kernel opted as the best trick in this study. Finally, the best model of bothapplications revealed, and the .resulted models evaluated as reliable and acceptable

کلمات کلیدی:

Gene Expression Programming; Support Vector Machine; Tropospheric Ozone; Air Pollution; Tehran