

ABSTRACT

Air is one of the main needs of all living things on earth. Air pollution becomes a health disorder for life on land and aquatic life. DKI Jakarta is the capital of Indonesia which is densely populated because of its role as a metropolitan city. Mobility and dense industrial activity in DKI Jakarta make the air quality in DKI Jakarta less good.

Prediction of air pollution standard index (APSI) is carried out using support vector regression method based on APSI data set obtained from the Jakarta Open Data website of DKI Jakarta Environment Agency. The predicted parameters, namely PM₁₀, SO₂, CO, O₃, and NO₂, while the 5 stations where APSI data is taken, namely DKI 1 (Bunderan HI), DKI 2 (Kelapa Gading), DKI 3 (Jagakarsa), DKI 4 (Lubang Buaya), and DKI 5 (Kebon Jeruk). APSI predictions allow the public to anticipate early related to air pollution.

The predictions are implemented into the web using the Flask framework. Since there are 5 parameters in 5 stations, it produces 5 different data compositions according to substance parameters and 25 different parameter number combinations. The results of data partition testing of each substance are PM₁₀ 80% training data 20% testing data, SO₂ 50% training data 50% testing data, CO 80% training data 20% testing data, O₃ 70% training data 30% testing data, and NO₂ 50% training data 50% testing data. From the results of parameter testing found the best modelling of PM₁₀ DKI 3 station with $C = 10$, $\epsilon = 0.15$, $\gamma = 0.525$, RMSE 0.086667, SO₂ DKI 4 station with $C = 100$, $\epsilon = 0.01$, and $\gamma = 0.3$, RMSE 0.052748, CO DKI 1 station with $C = 100$, $\epsilon = 0.01$, $\gamma = 1,125$, RMSE 0.052885, O₃ DKI 1 station with $C = 10$, $\epsilon = 0.01$, $\gamma = 0.675$, RMSE 0.060898, NO₂ DKI 5 station with $C = 1$, $\epsilon = 0.01$, $\gamma = 0.15$, RMSE 0.061959. Based on beta testing conducted, the website that created can help in predicting the APSI that you want to know with a percentage of usability testing value of 87.9%.

Keywords: APSI, Prediction, Support Vector Regression, Web.