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#1069 Summary

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Authors

Name	Hairani Hairani
ORCID iD	http://orcid.org/0000-0002-6756-5896
Affiliation	Universitas Bumigora
Country	Indonesia
Bio Statement	—

Principal contact for editorial correspondence.

Name	Anthony Anggrawan
Affiliation	Universitas Bumigora
Country	Indonesia
Bio Statement	—
Name	Dadang Priyanto
Affiliation	Universitas Bumigora
Country	Indonesia
Bio Statement	—

Title and Abstract

Title: Improvement Performance of the Random Forest Method on Unbalanced Diabetes Data Classification Using Smote-Tomek Link

Abstract

Most of the health data contained unbalanced data that affected the performance of the classification method. Unbalanced data causes the classification method to more easily classify the majority data and ignore the minority class. One of the health data that has unbalanced data is Pima Indian Diabetes. Diabetes is a deadly disease caused by the body's inability to produce enough insulin. Complications of diabetes can cause heart attacks and strokes. Early diagnosis of diabetes is needed to minimize the occurrence of more severe complications. In the diabetes dataset used, there is an imbalance of data between positive and negative diabetes classes. Diabetes negative class data (500 data) is more than diabetes positive class (268) so that it can affect the performance of the classification method. Therefore, this study aims to apply the Smote-Tomeklink and Random Forest methods in the classification of diabetes. The research methodology used is the collection of diabetes data obtained from Kaggle as many as 768 data with 8 input attributes and 1 output attribute as a class, pre-processing data is used to balance the dataset with Smote-Tomeklink, classification using the random

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forest method, and performance evaluation based on accuracy, sensitivity, precision, and F1-score. Based on the tests carried out by dividing data using 10-fold cross-validation, the Random forest algorithm with Smote-TomekLink gets the highest accuracy, sensitivity, precision, and F1-score compared to Random Forest with Smote. The Random Forest algorithm with Smote-Tomeklink has 86.4% accuracy, 88.2% sensitivity, 82.3% precision, and 85.1% F1-score. Thus, using Smote-Tomeklink can improve the performance of the random forest method based on accuracy, sensitivity, precision, and F1-score.

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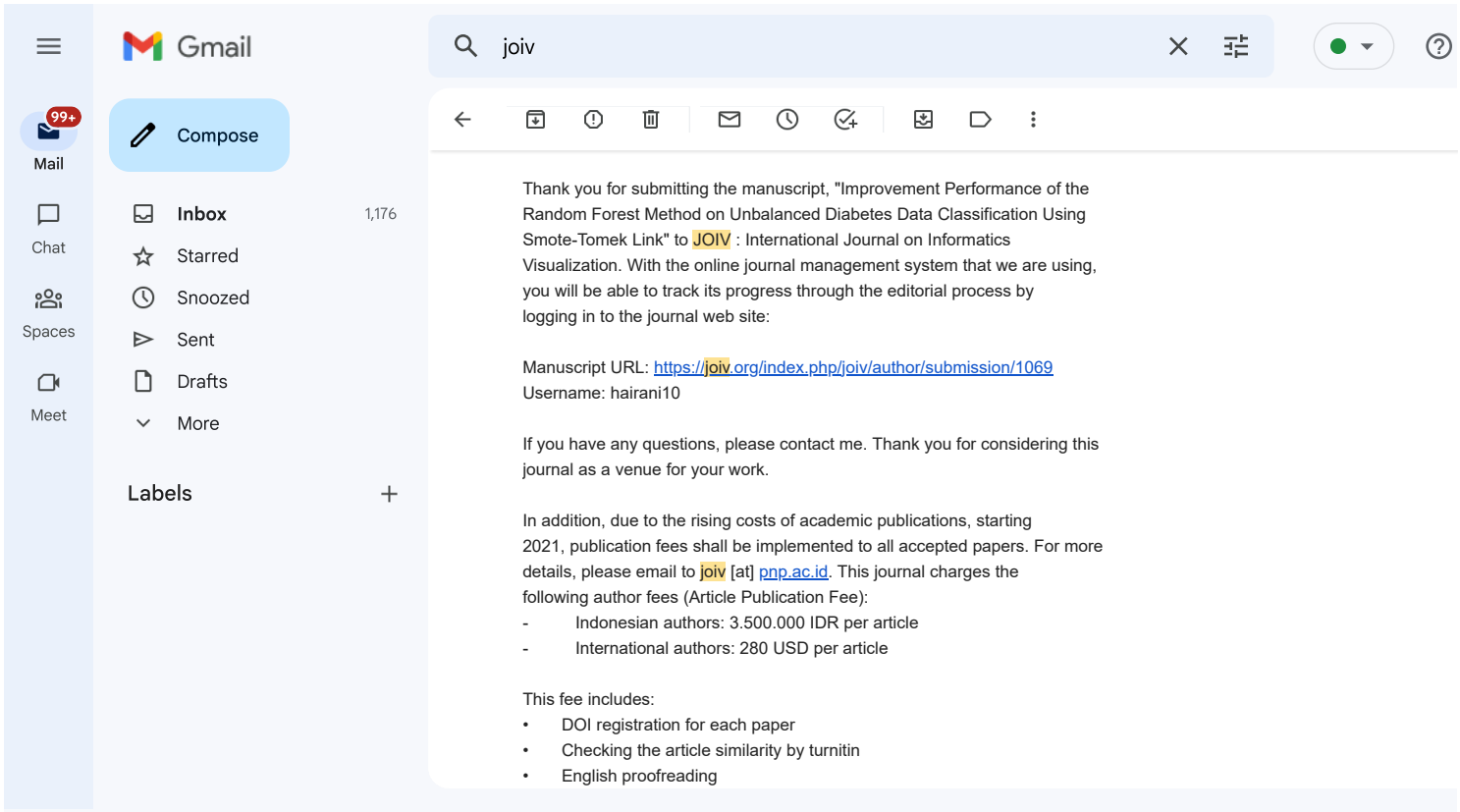

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