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Clustering the Addiction Levels of Drug Users Using Fuzzy C-Mean

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Abstract

Recently, the number of drugs abused, such as Narcotics, Psychotropics, and Addictive Substances have been linear increased with the drug users. The increasing number of these cases triggers the difficulties for rehabilitation associations in diagnosing the abuse level for medical and health prevention. Herein, data mining with a Fuzzy C-Mean clustering approach is employed to delve 506 drug users' addiction into three clusters by considering several indicators including age, urine test, duration of use, physical effects, and psychological effects. As a result, 215 data are recorded in clusters 1 as high optimum addiction, 105, and 186 data in clusters 2, and 3 as medium and regular addiction levels, respectively. The Silhouette Coefficient, Calinski-Harabasz Index, and Davies-Bouldin Index algorithms reveal high potential values to indicate the proper achievement of this clustering structural test. A clustering software has been successfully developed and tested to aid the calculation and analysis. Hence, the rehabilitation associations in Riau province as end-user of this case are aided in identifying the addiction level of drug users in order to ensure the proper therapeutic prevention and curative action. © 2025 Institute of Advanced Engineering and Science. All rights reserved.

Author Keywords

Clustering; Data Mining; Drug Addiction; Fuzzy C-Means; Silhouette Coefficient Index

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