

# ***CLUSTERING SYSTEM FOR HIGH SCHOOL LEVEL STUDENTS USING THE K-MEANS ALGORITHM IN AN EFFORT TO ADJUST LEARNING MECHANISM TO CAREER INTERESTS***

**RENDY WENDA DWI KURNIAWAN**

*Informatics Study Program, Faculty of Science & Technology  
University of Technology Yogyakarta  
Jl. Ringroad Utara Jombor Sleman Yogyakarta  
E-mail : [ree.dyadwan123@gmail.com](mailto:ree.dyadwan123@gmail.com)*

## ***ABSTRACT***

*The process of distributing high school level students to form optimal learning associations or groups in order to create a quality learning process often experiences obstacles, such as time, energy, and the results obtained are less effective. The distribution of students based on grades actually produces poor results, as indicated by the large number of students who feel they have the wrong major or are taking jobs outside the field that suits their career of interest. The distribution of high school level students should be carried out with reference to self-preparation regarding their career interests. This aims to minimize discrepancies or lack of basic competencies possessed by high school level students when choosing to continue to college or directly enter the professional world. Referring to the explanation that has been mentioned, the application of a clustering system using the K-means algorithm which is based on students' interests and hobbies, such as preferred subjects, preferred jobs, and preferred learning methods can be one of the efforts to create an effective learning process and efficient. With this clustering system, learning mechanisms can be adjusted to the characteristics or career interests of students. Based on research that has been carried out regarding the application of a clustering system using the K-Means algorithm to the data of 224 high school level students and for each MIPA and IPS major respectively 161 and 63, the conclusion is that 8 is the optimal number of clusters. Mathematics and Natural Sciences major with a Silhouette Index value of 0.835 which is classified as strong structure. Meanwhile, in the Social Sciences major, the optimal number of clusters was obtained, namely 6 with a Silhouette Index value of 0.778, which is also classified as a strong structure measure.*

*Keywords: Clustering, K-Means, Learning Mechanism, Career Interests*