Designing determination of procrastination level in students utilize genetic algorithms method in data mining classification

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Abstract. Someone who has difficulties in doing something in deadline, often did postpone, overprepare in something, even fail in completing the task in deadline, called as someone who did procrastination. This study utilize Genetic Algorithm method to determine the consideration in designing information system. The objective of this study is to apply the database management in determining procrastinative characteristic in students at school. In Genetic Algorithm method, this study utilize most appropriate determined indicators with Chromosome Representative in similarity between data characteristics in the constituent criteria classification that can influence the procrastinative characteristic in students. Based on the test and result, the conclusions are, Information System in Procrastination Determination Program would be computerized system, thus the Information System in Determining Procrastination in students would be useful in the future.

1. Introduction
Someone who has difficulties in doing something in deadline, often get postponed, overprepare in something, even fail in completing the task in the deadline, named as someone who did procrastination, thus procrastination in an inefficient behavior in time management, and there is a tendency to not start to work immediately when someone confront the task.

Procrastination could be did in some type of tasks. Peterson (in [1] mentioned that someone can did procrastination only in certain or many things, whereas types of task almost delayed by the procrastinator such as making decision task, household tasks, academic activities, office task and many others.

Academic and non-academic procrastination often become a technical term that used by the experts to divide those type of tasks. Academic procrastination is a type of an adjournment in formal tasks related with academic tasks, for example school task or course task. Non-academic procrastination is an adjournment in type of non-formal tasks or task related with daily routin activities, for example household tasks, social tasks, office task and et cetera[2].

Procrastination evaluation is a challenging matter and important in student’s academic results. There are many classification method suggested in the literature in order to overcome this matter but most of them are not accepted by the experts because of some reason.

Data mining and knowledge discovery is the parts of computation method that aim to collecting and analysing data related to the function of a system in order to obtain the better comprehension [3]. Occupation related with data mining divided into four category, that are prediction modelling, cluster
analysis, association analysis, and anomaly detection. Data classification is a general data mining task and mostly used. Genetic Algorithm is data mining algorithm that mostly used.

To overcome the matter of efficiency and accuracy in level of procrastination determination in studentrated by academic factors using Genetic Algorithm Method.

1.1. Procrastination
In scientist circles term of procrastination showing the tendency to postpone completion of a task or a job, first used by Brown and Holzman. Someone who has difficulties in doing something in deadline, often get postponed, overprepare in something, even fail in completing the task in the deadline, named as someone who did procrastination, thus procrastination in an uneficient behavior in time management, and there is a tendency to not start to work immediately when someone confront the task.

1.2. Academic Procrastination
Academic procrastination is a type of an adjournment in formal tasks related with academic tasks, for example school task or course task. According to [4], type of task which become the object of academic procrastination is tasks related with academic performance. Those behavior marked as an adjournment in academic task selected from the other behavior and categorized into academic procrastination substance.

1.3. Data Mining
Model of Data mining consists of a set of a regulation, similarity or function of complex transfer which can be used to identified the useful, comprehend and behavior prediction data pattern. They can be categorized into two main class suitable with the objectives, as follows:[5]

1.4. Knowledge Discovery in Database (KDD)
Knowledge Discovery in Database (KDD) is an organized process of valid identification, new pattern, useful and understandable from a big and complex data collection.

Regarding to [6] the big Knowledge Discovery in Database. KDD is an organized process of valid identification, new pattern, useful and understandable from a big and complex data collection. Data Mining (DM) is a core process of KDD, which including algorithm conclusion that exploring data, developing model and discovering unknown pattern. This model used to comprehend the phenomenon from analysis, data and prediction.

1.5. Genetic algorithms (GA)
Genetic algorithms (GA) is an algorithm used to discover optimum solutions for any difficult matter, for example optimization problem, travelling sales person problem and learning[7][8].

2. Research Method
This study utilize experiment research method, that academic data and questionnaire data related to students data. Then determined the attributes will be used in data mining.

Problem identification process conducted by seeing, observing and understanding the assessment process in the system, directly or trough the understanding towards the obtained data from academic system, in order to determine the object of data mining study, discover the relationship between one data and another data dan to find the attributes that used in it. The object of this study determined by using data mining technic to obtain the precise algorithm prediction towards procrastination students.

2.1. Data Management in Genetic Algorithm

2.1.1. Data Manager Chromosome Representative in Genetic Algorithm
In this case decision variable (x1 and x2) directly become chromosome string gene, thus the length of chromosome string is 2.
2.1.2. Initialization
The initial population arose randomly. For example determined popSize=10 then the result of population is as follows:

2.1.3. Crossover
Conducted by selecting two parents randomly from population. Crossover method that used in this study is extended intermediate crossover [9] which resulting offspring from combination of two parents values.

2.1.4. Mutation
Conducted by selecting one parent randomly from population. Mutation method that used in this study is random mutation which conducted by adding or diminish the selected gene value with the little random amount.

2.1.5. Selection
Conducted in order to select 10 of 16 individual that live maintained in next generation. Method used in this process is tournament selection. This approach is conducted by taking little amount of individual randomly (usually 2, called binary tournament selection) from population accommodation and offspring. One individual with biggest fitness value would be selected to entry the next population. The step

3. Result and Discussion
As described in the introduction, then in this study, characteristic of procrastinative utilize Genetic Algorithm Method, that used Javanese language program. The main menu is the main display in the program consists of Form, Report, and Exit menu. Form Menu consists of Procrastination Form and Students Form. In the sub menu student form display the student’s code, student’s name, other biodata and consists of additional button to add data, save to save inputed data, edit for data correction, erase to remove the data and exit for discharge from the program. Procrastinative characteristic form which consists of characteristic codes for determined attribute. Report menu consists of the end result report. Exit menu functioned as to discharge from the program.

3.1 ERD
Entity reality diagram is a relationship between one field to another field that mutually related and interdependent with the other system.

![Figure 1. ERD Diagram](image-url)
3.2 Menu Structure Design

![Menu Structure Design Diagram]

**Figure 2. Menu Structure Design**

3.3 Flowchart
Flowchart is a picture or a diagram that shows the sequence and relationship between the process and the instruction. This picture is declared with the symbol. Therefore, every symbol describes a certain process. While the relationship between the processes described with connecting lines.

![Flowchart Diagram]

**Figure 3. Flowchart**
3.4 System Designing
Based on the observation conducted at International school in Bali, it was necessary to conduct a special handling for the students with procrastinative character to maintain the good image of the alumnus of the international school. Researchers take the initiative to establish the system of procrastinative character determination utilize the Genetic Algorithm method.

3.5 New System Design
In this new system design, researchers attempt to establish the application of procrastinative character determination in students utilize Genetic Algorithm method, through the computer system utilize the Java Program. Netbeand is one of alternative in order to make easier access also give information about student’s character of procrastination utilize Genetic Algorithm method.

3.6 Main Menu Design

![Main Menu](image)

**Figure 4. Main Menu**

Explanation: Picture 3.6 Main Menu Page in Netbeand application consists of Input, Report and Exit. Input contain input such as village data and ground data that already determined before. Report, result of the data already inputed and Exit is discharge from the program.

4. Conclusions
Based on the discussion result and designing, the conclusions obtained as follows: (1) Information System of Procrastinative Determination Program in student and the school expected that become computerized, and (2) as for the conclusion that Genetic Algorithm is able to solve the problem about procrastinative character determination in students to support or maintain the quality of an education result at international school.

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