

ABSTRACT

Abstract The Information Systems Study Program is one of the Study Programs at Telkom University that plays an active role in supporting the scientific development of information systems that support enterprise and digital transformation. The Information Systems Study Program provides five areas of specialization which are grouped into two skill groups (Cybernetics and Enterprise and Industrial Systems) to support the profile of graduates who are targeted as Data Specialists, Information System Developers, Technopreneurs, IS Consultants, and Advanced Studies. Students of Information Systems Study Program will determine the choice of the field of specialization they will pursue in the seventh semester. The choice of field of specialization will serve to direct students in the preparation of the final project. Students often find it difficult to determine the field of specialization that will be chosen, because they tend to avoid areas of specialization that are considered difficult based on the courses they have taken and not infrequently they choose areas of specialization according to their friends' choices without considering the factors of skills and competencies they have So, this of course will have an impact on the process of completing their final project because of the discrepancy between the field of specialization with the interests and talents of the student. In addition, these problems will also have an impact on the uneven distribution of the number of students in each field of specialization.

Therefore, in this study, we will analyze the selection of areas of specialization in the Information Systems Study Program by implementing machine learning using the classification method. In the classification process, researchers will use the Artificial Neural Network (ANN) algorithm. Researchers chose to apply this algorithm because it can classify and understand very complex patterns. In addition, ANN can adapt to various statistical models, and can flexibly describe linear and non-linear models. In the machine learning process, the researcher uses the Python programming language to analyze the predictions of the student's field of interest.

In this case, in the data processing the researcher uses the NIM attribute, the average value of the prerequisite courses in the field of specialization, the choice of the student's first and second specialization fields, the status of student participation in the profession, as well as the quota of specialization fields that come from the number of lecturers who teach in the field. that interest. These attributes are factors that can support which students can be accepted in the field of specialization. The implementation of ANN in this case produces an AUC of 0.9950 and an accuracy of 0.9863. Thus, the ANN algorithm can be used to predict students' areas of interest. The application of machine learning is expected to be able to predict students to be accepted in the field of specialization according to their expertise, so that later there will be no wrong students in choosing the field of specialization and can facilitate the process of making their final project.

Keywords— fields of interest, machine learning, artificial neural network