ABSTRAK

Tes Potensi Akademik (TPA) merupakan tes yang harus dilalui calon mahasiswa yang mendaftar lewat jalur tes di Universitas Sanata Dharma. Hasil tes dapat digunakan oleh dosen pendamping akademik untuk melakukan pendampingan kepada mahasiswa yang memerlukan pendampingan. Oleh karena itu, maka dilakukan penelitian untuk memprediksi prestasi akademik mahasiswa berdasarkan hasil tes potensi akademik. Penelitian ini menggunakan teknik *data mining* dengan menerapkan algoritma *k-nearest-neighbor*. Data yang digunakan adalah data hasil tes potensi akademik dan IPK semester 1 sampai 4 dari mahasiswa Fakultas Keguruan dan Ilmu Pengetahuan Universitas Sanata Dharma angkatan 2015 dan 2016. Uji akurasi penelitian ini menggunakan *cross validation* dan *confusion matrix*. Dalam penelitian ini, dilakukan percobaan pada data dengan membagi menjadi beberapa dataset tiap jurusan dengan 5-*fold* dan jumlah tetangga terdekat 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, dan 25. Dari hasil percobaan didapatkan akurasi tertinggi pada dataset IPK 4 jurusan Pendidikan Guru Sekolah Dasar (PGSD). Akurasi data IPK 1 tertinggi sebesar 65,417% diperoleh ketika k = 21, 23, 25, akurasi data IPK 2 tertinggi sebesar 69,167% diperoleh ketika k = 21, 25, akurasi data IPK 3 tertinggi sebesar 68,750% diperoleh ketika k = 9, 15, dan akurasi data IPK 4 tertinggi sebesar 70,000% diperoleh ketika k = 25. Dengan demikian dapat disimpulkan bahwa metode *k-nearest-neighbor* dapat diterapkan untuk memprediksi prestasi akademik mahasiswa berdasarkan hasil tes potensi akademik.

Kata Kunci : prediksi IPK, tes potensi akademik, *data mining*, *k-nearest-neighbor*

ABSTRACT

Academic Potential Test (TPA) is tests that must be passed by prospective students who register through the test path at Sanata Dharma University. Test results can be used by academic advisors to provide assistance to students who need help. Therefore, this research is conducted to predict student academic achievement based on the results of academic potential tests. This study uses data mining techniques by applying the k-nearest-neighbor algorithm. The data used are academic potential test results data and Grade Point Average (GPA) of semester 1 to 4 of the Teaching and Science Faculty students of Sanata Dharma University batch of 2015 and 2016. The accuracy test was performed by cross validation and confusion matrix. In this study, an experiment was conducted on data by dividing it into several datasets based on study program, using 5-fold cross validation technique and by varying the number of closest neighbors 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, and 25. From the results of the experiment, the highest accuracy was found in the dataset of the GPA 4 of the Department of Primary School Teacher Education (PGSD). The highest accuracy of the GPA 1 was 65,417% that obtained when k = 21, 23, 25. The highest accuarcy of the GPA 2 was 69,167% that obtained when k = 21, 25. The highest accuarcy of the GPA 3 was 68,750% that obtained when k = 9, 15. The highest accuarcy of the GPA 4 was 70,000% that obtained when k = 25. Thus it can be concluded that the k-nearest-neighbor method can be applied to predict student academic achievement based on the results of academic potential tests.

Keywords: prediction of GPA, test of academic potential, data mining, k-nearest-neighbor