

## **Projection of postgraduate students flow with a smoothing matrix transition diagram of Markov chain**

### **Abstract**

This paper presents a case study of modeling postgraduate students flow at the College of Art and Sciences, Universiti Utara Malaysia. First, full time postgraduate students and the semester they were in are identified. Then administrative data were used to estimate the transitions between these semesters for the year 2001-2005 periods. Markov chain model is developed to calculate the -5 and -10 years projection of postgraduate students flow at the college. The optimization question addressed in this study is 'Which transitions would sustain the desired structure in the dynamic situation such as trend towards graduation?' The smoothed transition probabilities are proposed to estimate the transition probabilities matrix of  $16 \times 16$ . The results shows that using smoothed transition probabilities, the projection number of postgraduate students enrolled in the respective semesters are closer to actual than using the conventional steady states transition probabilities.

### **Keywords**

Markov chain; Smoothing technique; Students flow