tǊƻƨŜŎű Iмƴ CSUN Students Performance Assessment Model

At least 30% of the students attempting a course received D or F grades or withdrew from the course in an unacceptable manner during the academic year. Student performance evaluation is the main process to enhance performance and decrease failure rate. Most of the currently used systems are based on linking the courses objectives with the course outcomes, but they neglected the factors affecting the student rate of learning for example: professor number of years of experience, student level of security of income, number of students in the classrooms; the social activity level in the university and etc.

Therefore, there is a need for a system, which: (1) measures the effect of these factors on the students' performance, (2) models the effect of qualitative and quantitative variables on the learning process, (3) predicts the student performance, and (4) prioritizes the scenarios of improvements.

The neural network will be used to build and test this model because of the capability of finding the relation between inputs and out puts it finds the relation between factors of inputs also. The data will be collected using survey techniques. This model will help the professors/students and the University to improve student performance and will improve the success rate.

This project will help students to understand the factors affecting his academic performance and learning level. It helps him to understand and practice models building and simulation.

Project #2: Building Interactive Construction Simulation Systems

Uncertainty is an entrenched characteristic of most construction projects. Typically, probability distributions are utilized to accommodate uncertainty when estimating duration of project's activities. Distributions are fitted, based on the collected data from construction projects, to estimate activity durations, to assess productivity and cost, and to identify resource bottlenecks using simulation. The subjectivity in selecting these fitted probability distributions is an imprecise process and may significantly affect simulation outputs. Most research works in simulating construction operations has focused predominantly on modeling and has neglected to study the effect of subjective variables on simulation process. Therefore, there is a need for a system, which: (1) handles uncertainty, fuzziness, missing data, and outliers in input data, (2) effectively utilizes historical data, (3) models the effect of qualitative and quantitative variables on the simulation process, (4) enhances simulation modeling capabilities, and (5) optimizes simulation system output(s).

The main objective of this research is to develop a knowledge discovery based simulation system for construction operations, which achieves the abovementioned necessities. This system comprises three stages: (i) a Knowledge Discovery Stage (KDS), (ii) a Simulation Stage (SS), and (iii) an Optimization Stage (OS). In the KDS, raw data are prepared for the SS where patterns, which represent knowledge implicitly stored or captured in large databases, are extracted using Fuzzy K-means technique. During the KDS, the effect of qualitative and quantitative variables on construction operation(s) is modeled using Fuzzy Clustering technique.

This project helps students to understand construction simulations, methods, and equipment.

tǊƶƨŜŎű ǀoY Automation in Engineering

Applications of automation in engineering are cited as an efficient part to improve productivity, quality, working conditions, and skilled labor shortages in the industry. Advanced automation techniques have a great potential nowadays. The objective of this research is to explore and investigate how to use automation concepts to solve the engineering problems. Programming will be a big part of this project. A case study will be used as a training example (KEYSTONE): An automated general purpose construction simulation language (KEYSTONE) was developed using C#. The developed system was validated and verified using several case studies with sound and satisfactory results, i.e. 4% - 11% digression.

This project helps student to understand automation, and practice programming languages.