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From NEAT to Predictive Analytics

Dr. Andy Wang

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The NEAT initiative in the College of Applied Sciences and Arts is a process to improve retention rates and student success through four critical time-points in a semester, represented by the four letters in "NEAT." The letter "N" refers to a "no-show" report in the first week; "E" is an "engagement" report at the end the fourth week; "A" is at the end of the eighth week, when students should have "access" to their middle term grades; and "T" is the "term" performance assessment at the end of a semester. NEAT has been helping improve our student academic performance, especially for those potentially at-risk students. However, NEAT is largely reactive in its nature, rather than proactive. We need a better tool to predict and subsequently support student academic success. For instance, we need a tool to predict whether a student will earn a C or better in a given course before the withdraw deadline, even during the first week, based on the student performance in this course, prior academic performance, and key demographic characteristics.

Predictive analytics uses many techniques from data mining, statistics, modeling, machine learning, and artificial intelligence to analyze current data to make predictions about the future. It will help us to identify academically at-risk students early so that the students have a better opportunity to improve their academic achievement and career success. Faculty and advisors may intervene with struggling students before it is too late. The success of predictive analytics depends, in a large part, on reliable input data and big data technologies. We need a series of risk factors as the input to the analytic system, including attendance record, homework or assignment grades, quiz grades, RSO membership, level of social integration into campus life, study skills, etc. It is best to integrate with our current student database and teaching/learning tools, such ARGOS, SSC, D2L, Hobsons Connect, etc. The consolidation of academic, demographic, and social data will be turned, through the predictive analytics system, into interventions that help individualized student success.