

# **Analysis and Prediction of Students' Absence using Educational Data Mining**

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## **Abstract**

Class attendance is required of all undergraduates unless the student has an official excused absence. For unexcused absence, the student may be denied the opportunity to make up some or all of the work missed. The student is responsible for class-related work missed as a result of an absence. However, a time of loss is very difficult for a student to be overtaken. The aim of this research is to analyze the causes of students' unexcused absences. To this end, the behavior of students in terms of attendance needs to be analyzed. Educational Data Mining is common research area that is based on applying Data Mining approaches to better analyze and understand students' behavior. This research involves the analysis of the attendance behavior of students from historical data using Data Mining techniques to improve students' performance. The results showed that the university timetabling is the main factor that affects the student's absences.

## **Keywords**

Undergraduates, absences, attendance, timetabling, performance

## **Biographies:**

**Souad Larabi Marie-Sainte** graduated in operational research from the University of Sciences and Technology Houari Boumediene, Algeria. She received the dual M.Sc. degrees in mathematics, decision and organization from Paris Dauphine University, France, and in computing and applications from Sorbonne Paris1 University, France, and the Ph.D. degree in bio-inspired algorithms (artificial intelligence) from the Computer Science Department, Toulouse1 University Capitole, France, in 2011. She was an Assistant Professor with the College of Computer and Information Sciences, King Saud University. She was also an Associate Researcher with the Department of Computer Science, Toulouse1 Capitole University, France. She is currently an Assistant Professor with the Department of Computer Science, Associate Director of Software Engineering and Cyber Security Master Programs, and Vice-Chair of the ACM Professional Chapter at Prince Sultan University. She has written several articles and has attended various specialized international conferences. She has also participated in several research projects. Her research interests include combinatorial optimization, metaheuristics, artificial intelligence and especially bio-inspired algorithms applied to multidisciplinary domains, algorithms analysis and design, bioinformatics, data mining, education, machine and deep learning, biometric identification, and natural language processing.

**Roohi Jan** is a Computer Science faculty at Prince Sultan University (PSU)- Women Campus. She has been in the field of teaching since year 2003 and has also worked as a Systems Analyst in National Informatics Centre, India-Ministry of Information Technology for some years. She had a privilege to chair the Computer Science Department

at PSU for 3 years. She is currently holding the position of Director, Quality Assurance Center-Women Campus under the Deanship of Quality Assurance and Development (DQAD). The main focus of her job is to ensure internal and external quality standards are practiced in PSU at all levels of academic and administrative affairs. She holds a Master degree in Software Systems from BITS Pilani, India. Her research interest is in the field of System Analysis and Design, Program Assessment and Educational Data Mining.

**Sarah Al-Abdulhadi** is a Software Engineering and Cybersecurity senior student at Prince Sultan University, Riyadh, KSA. Sarah earned two nanodegrees from Udacity and MISK, in Data Science and Machine Learning. She is doing her cooperative training in STC, Cybersecurity sector as penetration tester, and expected to graduate by July 2020. Sarah served as a machine learning engineer and web developer in KACST as a summer trainee. She has taught courses in youth leadership, data science, python and cybersecurity. She has served as Cisco ambassador in Prince Sultan University. Sarah has led and participated in several clubs in her university such as Cybersecurity, Toastmasters and EdTech. Her research interests include data science, machine learning, artificial intelligence and cybersecurity.

**Ali Almed Al Matouq** received the B.Sc. and M.Sc. degrees in electrical engineering from King Fahd University of Petroleum and Minerals, Dhahran with distinction, in 2002 and 2007, respectively and a M.Sc. degree in Chemical Engineering and a Ph.D. degree in Electrical Engineering from Colorado School of Mines in 2012 and 2014, respectively. He is currently an Assistant Professor in the Engineering Management department of Prince Sultan University, Riyadh and leader of the advanced operations research group. His research interests include process control and optimization with applications in chemical and biological engineering.