

The context: Educational Data Mining and Learning Analytics



Michał Podpora
Opole University of Technology

Educational Data Mining

emerging multidisciplinary research area [1], concerned with developing methods [2] for exploring the unique types [3] of data extracted from various educational information systems [1]

+ = data-driven decision making [1]

+ = time, sequence, hierarchy, context [2]

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[2] Educational Data Mining Society: Educational Data Mining, on-line, 2014

[3] Journal of Educational Data Mining: Home, on-line, 2008

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“to make beneficial use” of large amounts of data about students available for EDM, “in order to better understand the processes of learning and the social and motivational factors surrounding learning” [4]

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acquisition, collection, analysis and reporting of a specific data about students and their context, in order to gain **knowledge on their learning** process, to parametrize it and (if possible) to optimize it.

//includes questionnaires, forms, etc.

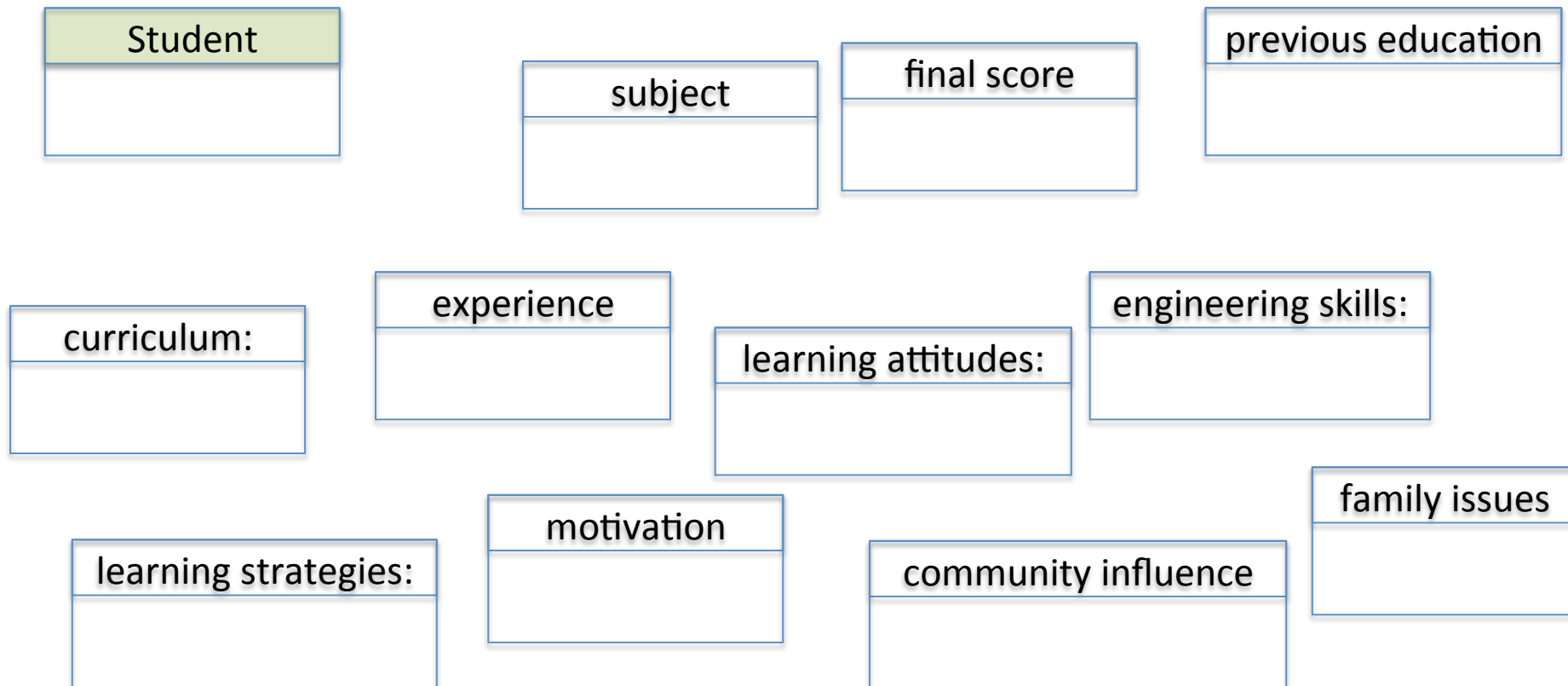
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	agree	disagree
Math is too hard		
Dr Smith is rude		
I like to party		
My love has left me		
Engineering is cool		

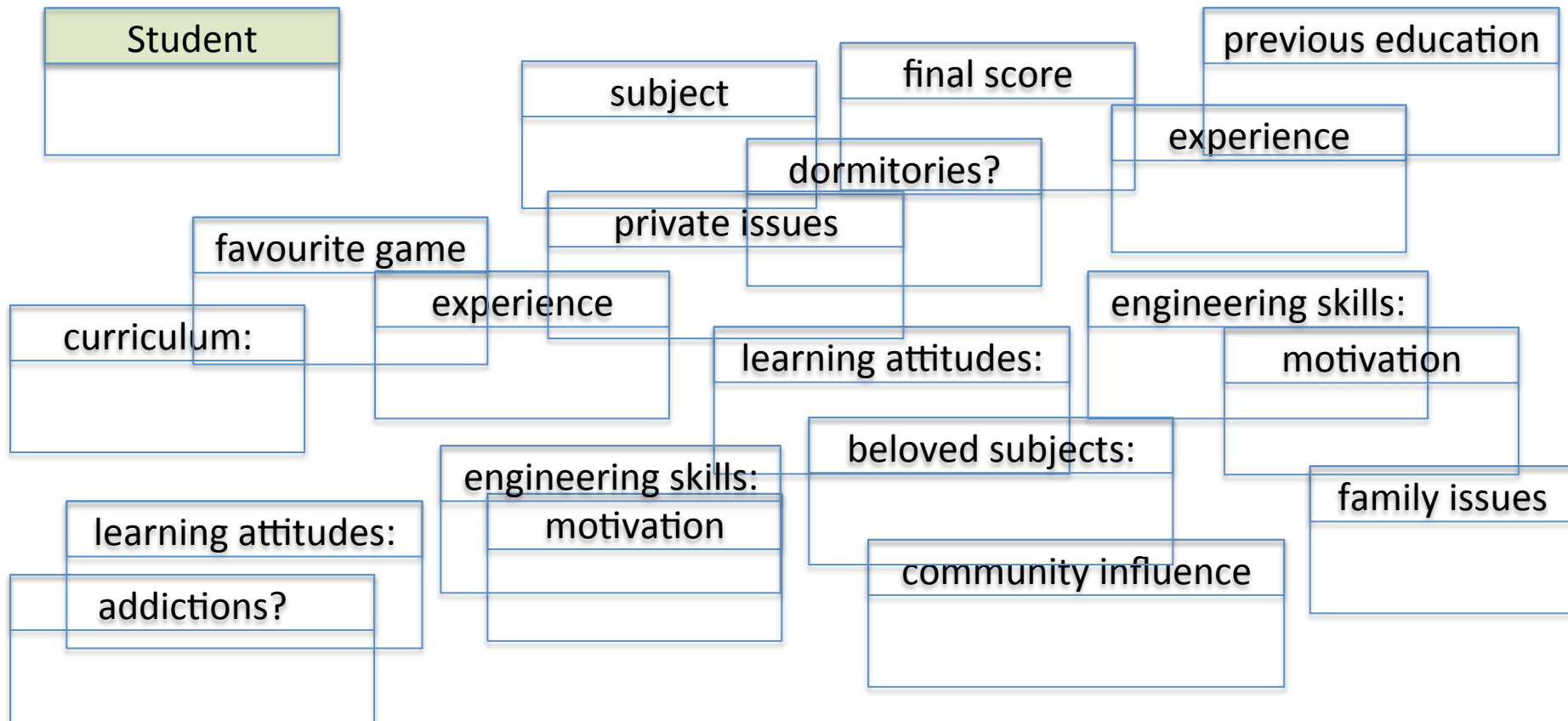
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Student

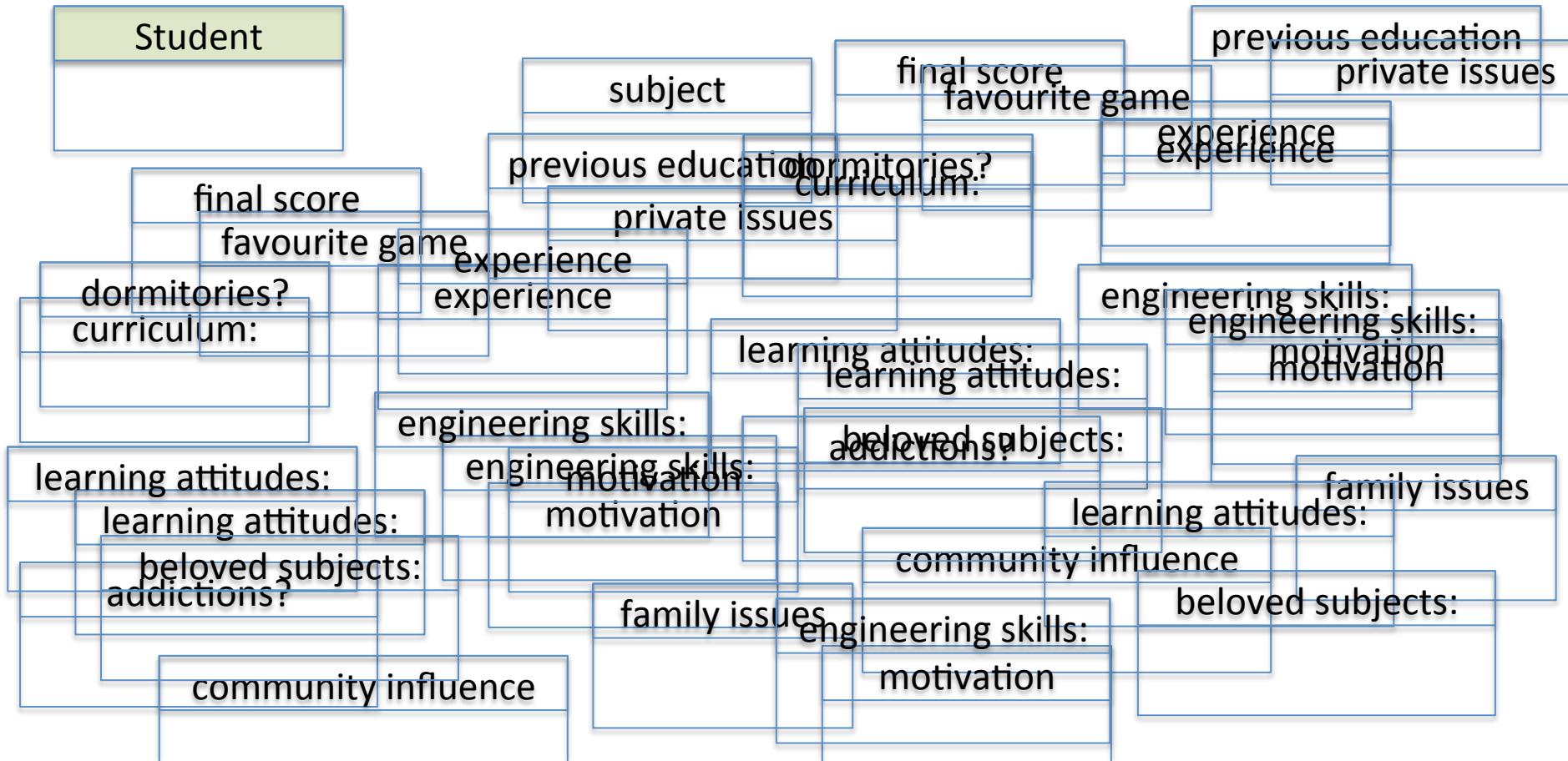
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Student Explanatory Information					
Attribute	Type of Variable	UAB	Comments	LEON	Comments
Student ID	Natural Number	Available (Yes/No)		Available (Yes/No)	
YearOfBirth	Natural Number				
PlaceOfBirth	Factor				
Sex	Factor (Female, Male)				
ResidenceCity	Factor				
ResidenceCityDuringStudies	Factor				
AccessToStudiesAge	Natural Number				
Nationality	Factor				
PreviousStudies	Factor (SciencesSecondary, TechnologicalSecondary, LiteratureSecondary, ProfessionalStudies)				
PreviousStudiesCenter	Factor				
FatherEducationLevel	Factor (PrimaryLevel, SecondaryLevel, UniversityLevel, DoctorateLevel)				
MotherEducationLevel	Factor (PrimaryLevel, SecondaryLevel, UniversityLevel, DoctorateLevel)				
AdmissionScore	Real Number				
Degree Information					
Attribute	Type of Variable	UAB	Comments	LEON	Comments
Degree	Factor (Degree1, Degree2, ..., DegreeM)	Available (Yes/No)		Available (Yes/No)	
Institution	Factor (UAB, POLIMI, ULEON, GALATI, OPOLE, BRAGANCA)				
DegreeNature	Factor (ComputerScience, ElectricalEngineering, ControlEngineering, ...)				
NumberStudents1stYear	Natural Number				
NumberTotalStudents	Natural Number				
NumberECTS	Natural Number				
NumberYears	Real Number				
Languages	Factor (Only Country Language, Only English, Country Language and English, Other)				
NumberAttemptsToEnrolSubject	Natural Number				
NumberAttemptsToBeEvaluatedOneYear	Natural Number				
ScoreImprovement	Factor (YES, NO)				
MinimumECTS1stYear	Real Number				
Specialities	Natural Number				
Student Performance Information					
Attribute	Type of Variable	UAB	Comments	LEON	Comments
Student ID	Natural Number	Available (Yes/No)		Available (Yes/No)	
YearsToFinishDegree	Natural Number				
Mobility	Factor (No, Erasmus, Other)				
Subject1NumberECTS	Real Number				
Subject1Year	Natural Number				
Subject1Semester	Natural Number				
Subject1KnowledgeArea	Factor (Area 1, Area 2, ..., Area M)				
Subject1Language	Factor (Country Language, English, Other)				
Subject1Methodology	Factor (Theoretical, Laboratory, Theor + Lab)				
Subject1Nature	Factor (Mandatory, Elective, BSc Thesis, Internship)				
Subject1WeekHours	Real Number				
Subject1Score	Real Number				
Subject1NumberAttempts	Natural Number				
Subject1AverageScore	Real Number				
Subject1FailureRate	Real Number				
Subject1AverageScoreLastYear	Real Number				
Subject1FailureRateLastYear	Real Number				
Subject1NumberECTS	Real Number				
Subject1Year	Natural Number				
Subject1Semester	Natural Number				