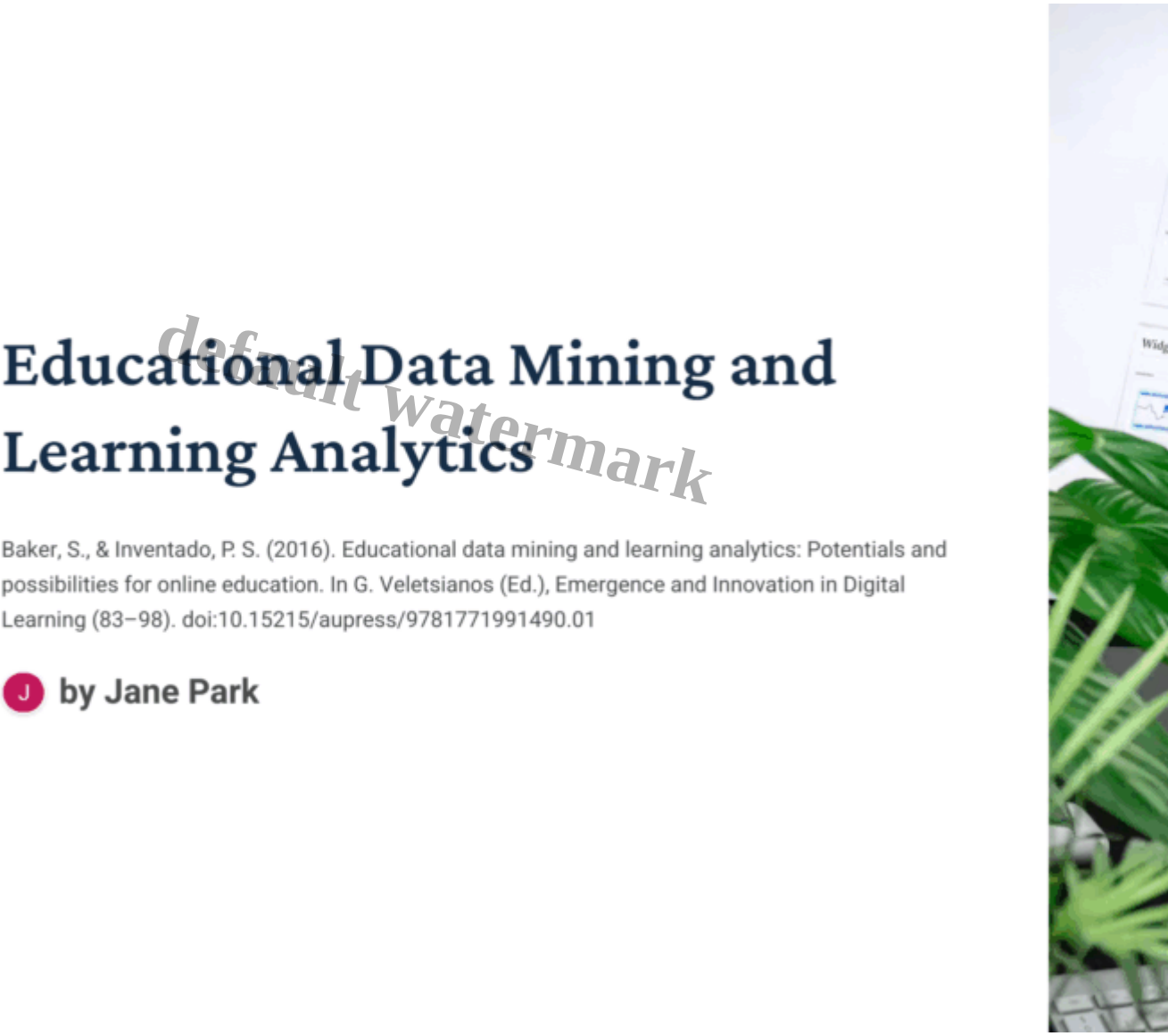
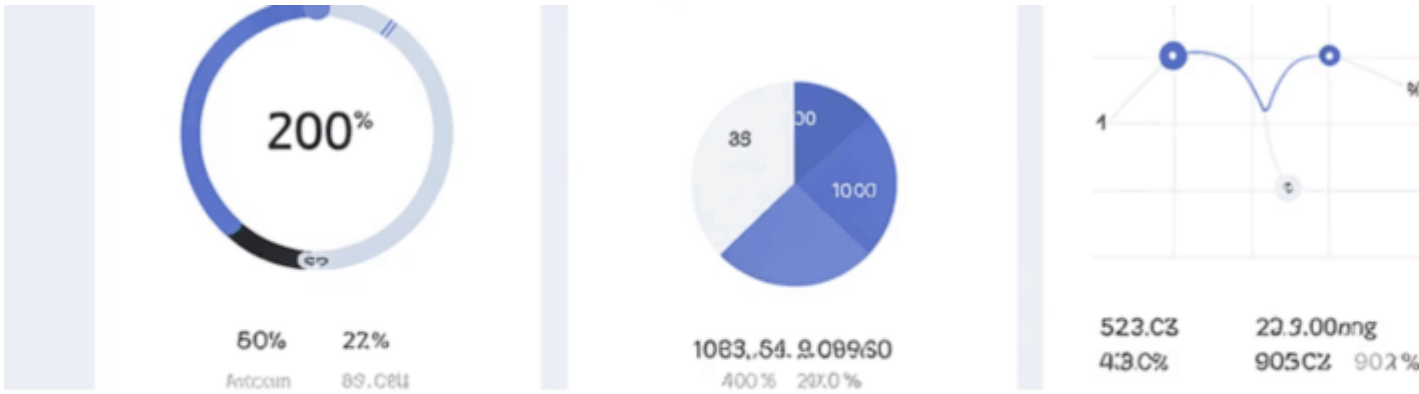
Educational Data Mining and Learning Analytics

Description





The Data Revolution in Distance Educatio

Open University (UK)

Collects large amounts of student activity data, course information, feedback, completion rates, and demographic data through their Data Wranglers project.

University of Phoenix

Integrates data from marketing, student applications, contact information, support issues, grades, discussion forums, and content usage to predict student persistence.

Key Methods in EDM and Learning Analy

Prediction Modeling

Develops models to infer a single aspect of data from other variables, either to pre
constructs like emotion or knowledge. Used to predict student dropout, course pe
outcomes.

Structure Discovery

Finds natural structure in data without predetermined variables of interest. Social
used to discover relationships and interactions among individuals in online learni

Relationship Mining

Discovers unexpected relationships or patterns among variables, including correla
sequential pattern mining, and causal data mining.

Prediction Modeling in Practice

Feature Engineering

Distilling appropriate data to make predictions is crucial. Integrating theoretical understanding into data mining leads to better models than purely data-driven approaches.

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Applying prediction mo
provide timely intervent

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Model Validation

Validating models on diverse content and representative student samples ensures they will be effective in the contexts where they're applied.

Ming and Ming (2012), Kovacic (2010)

Structure Discovery and Network Analysi

Learning Communities

Social Network Analysis reveals how students' positions in networks relate to their sense of belonging in learning communities.

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Academic Success

Patterns of interaction and connectivity correlate with academic success and learner engagement.

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Relationship Mining Applications

Association Rule Mining

Finds if-then rules predicting relationships between variables, identifying patterns of performance characteristic of successful students.

Sequential Pattern Mining

Discovers patterns that manifest over time, revealing behaviors that characterize successful collaborative groups.

Ben-Naim, Bain, and Marcus (2009), Garcia et al. (2009)

Benefiting Learners Through Analytics

Automated Intervention

Systems adapt to individual differences among learners

Instructor Feedback

Empowering instructors with actionable insights

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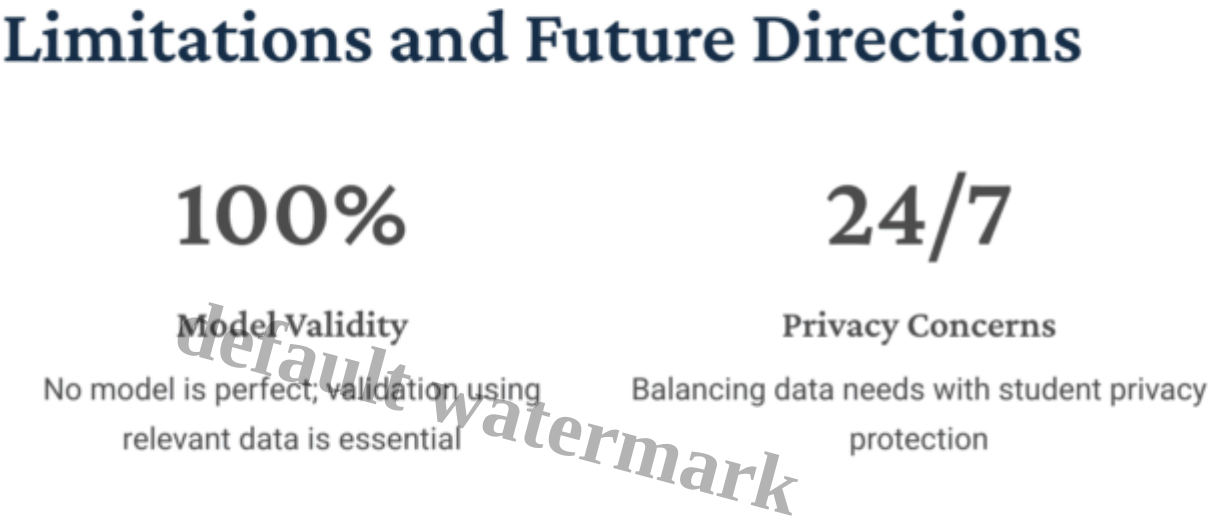

Category

1. Uncategorized

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