Student Performance Analytics

DSDE PROJECT – TEAM 2

https://github.com/Team2-DSE

Project Goals

1. Analyze student performance, attendance, and engagement metrics.
2. Identify patterns, trends, and predictors of academic success.
3. Provide actionable insights for educators to tailor interventions and support strategies.
4. Improve student retention and graduation rates through data-driven decision-making.

Team Working on this

Amjad Ali
Data Engineer

- Designing and implementing data pipelines for ingesting, cleaning, and transforming student performance data.

- Setting up and managing data storage solutions, such as Amazon S3 or Apache Hadoop, ensuring scalability and reliability.

Dwarakanath Reddy
Data Scientist

- Conducting exploratory data analysis (EDA) to understand patterns and trends in student performance data.

- Building descriptive and predictive models to identify factors influencing academic success and student outcomes.

Madhavi Kancham
Machine Learning Engineer

- Developing and implementing machine learning algorithms and models to address specific use cases, such as predicting student outcomes or identifying at-risk students.

- Optimizing and fine-tuning machine learning models for performance and scalability.

Imran Mohammad
Dashboard Developer / BI Analyst

- Designing and developing interactive dashboards and reports to visualize key performance metrics and insights derived from student performance data.

- Creating data visualizations using tools like Amazon QuickSight, Tableau, or Power BI to facilitate data-driven decision-making.

Problem Statements

1

Scalable Data Infrastructure:

Involves implementing reliable data ingestion pipelines, ensuring data quality and consistency, and leveraging cloud-based storage solutions for scalability and reliability.

2

Advanced Analytics Framework:

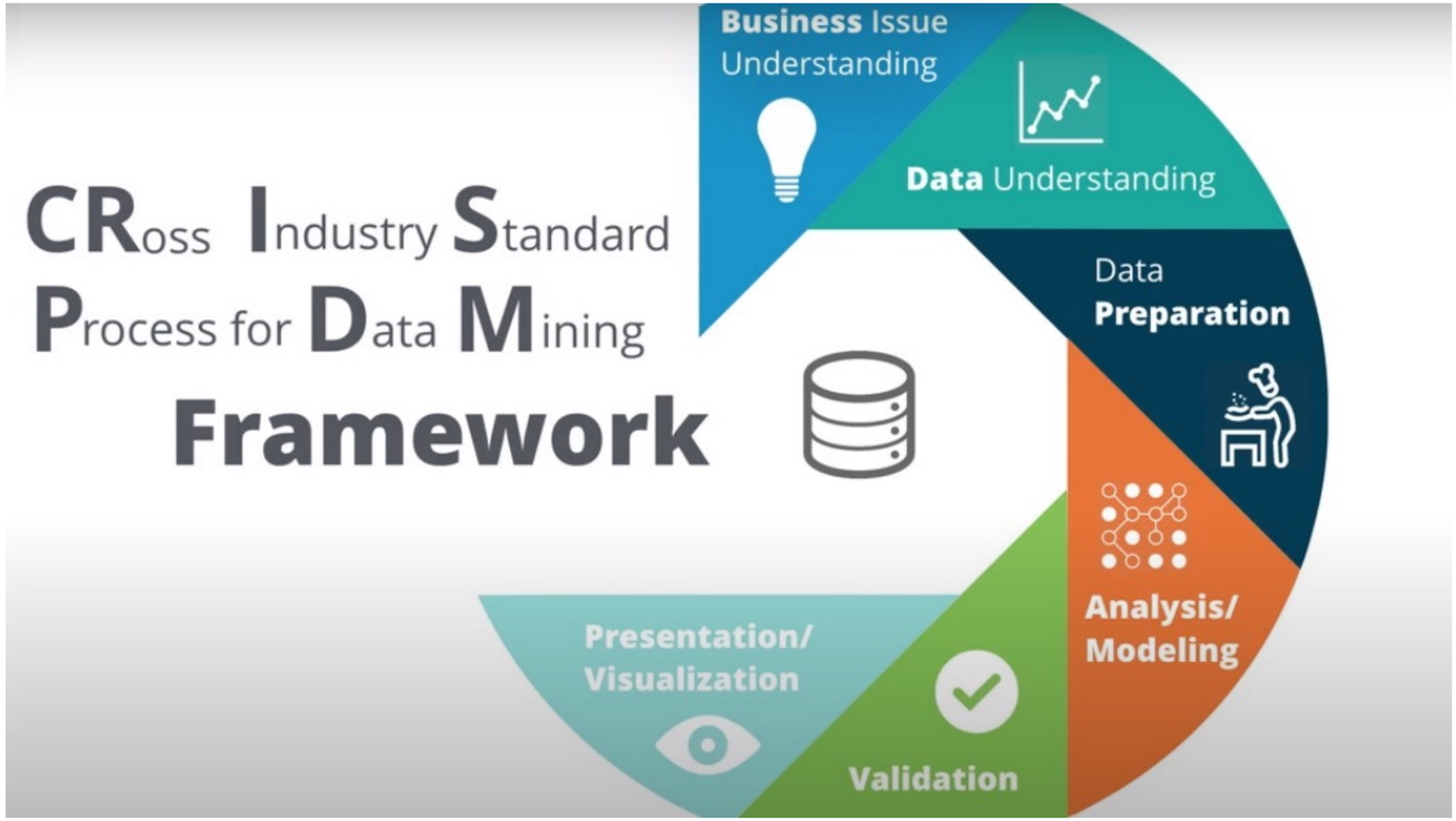
Includes developing efficient data processing pipelines, deploying scalable predictive models, and creating interactive dashboards for real-time visualization.

3

Automated Workflow Orchestration:

Establish automated workflow orchestration to streamline data engineering tasks, from data processing to model deployment.

Business Model / Plan



Procedure:

1. **Data Ingestion**
2. **Data Storage and Management**
3. **Data Processing and Transformation**
4. **Data Analysis and Modeling**
5. **Dashboard Development and Reporting**
6. **Automation and Orchestration**

Data

Student Information

Essential data encompassing personal details, academic enrollment, and demographic information to profile students.

Grades and Academic Performance

Crucial metrics comprising course grades, cumulative GPA, and academic standing to assess academic performance.

Attendance Data

Insights into student attendance patterns and trends.

Engagement Metrics

Core indicators covering participation, interaction, and communication, also extracurriculars like sports.

Technology/Expertise

1 **Data Engineering**

Amazon Glue

Amazon S3

2 **Data Science**

Amazon Redshift

Amazon Athena

3 **Machine Learning**

Amazon SageMaker

4 **BI Analytics**

QuickSight

Roadmap, Metrics & Milestones

Milestone #1

Data Infrastructure Setup and Data Ingestion Pipeline Implementation

Milestone #2

Advanced Analytics Framework Development and Model Deployment

Milestone #3

Dashboard Development and Automation Orchestration

Thank you