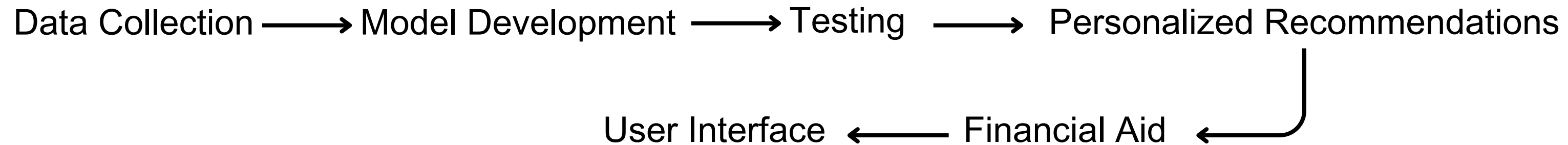# TITLE PAGE

- **Problem Statement ID –** 1661

- **Problem Statement Title-** Implement Software Solutions to Reduce Student Dropout Rates at Various Educational Stages

- **Theme-** Smart Education

- **PS Category-** Software

- **Team ID-**

- **Team Name -** error 418

IDEA TITLE

- ## Proposed Solution

Methodology:

Data Collection → Model Development → Testing → Personalized Recommendations

User Interface ← Financial Aid ←

Solution Overview:

- Data Preperation : Collect and preprocess data (attendance, grades, demographics).
- Model: Use Logistic Regression or Decision Trees to predict dropout risk.
- Testing: Validate the model against historical data for accuracy.
- Recommendations: Provide tailored interventions (e.g., tutoring / engagement activities) based on predictions.
- Financial Aid: Connect at-risk students with scholarships or financial aid.
- UI: Create a simple app for teachers to upload data, view predictions, and access resources.

TECHNICAL APPROACH
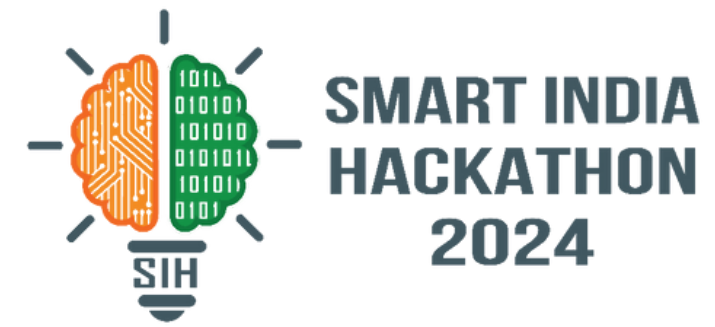
Technologies used:

- **Primary Programming Language:** Python
- **Libraries:** Pandas, Scikit-learn, TensorFlow,Pytorch
- **Backend:** Flask / Django (python)
- **Basic web interface:** HTML/CSS/JavaScript:
- **Hosting Service:** Heroku/Firebase/Simple local server.
- **Collaboration:** GitHub.

FEASIBILITY AND VIABILITY

Feasibility:
- Feasible due to the availability of existing schooling data
- Widespread availability of student information and solid foundation of schooling.

Viability:
- **Technical**: Utilizes accurate data and **machine learning techniques** with accurate predictions.
- **Economic**: Initial costs offset by long-term benefits and enhancement of student outcomes.

Challenges:
- **Data Quality and Privacy:** Ensurance of consistent, accurate data complying with privacy regulations critical.
- **Resource Availability:** Effective interventions and resources might be difficult to obtain or establish.

Strategies:
- **Standardized data collection** protocols and usage of **encryption** for data safety.
- **Partnership** with local organizations and development of a **resource allocation system.**

IMPACT AND BENEFITS

Impact

- The AI system predicts at-risk students, allowing educators to intervene early and keep them engaged.

- Provides personalized learning recommendations, engagement activities, and counseling, boosting overall student performance.

- Increased Access to Support: Connects students with financial aid and scholarships, reducing economic barriers.

Benefits

- **Social :**
Supports marginalized communities by addressing educational disparities.

- **Economical**
Reduces expenses related to student dropout for educational institutions.

RESEARCH AND REFERENCES

Details / Links of the reference and research work

- ***Artificial Intelligence and the Future of Teaching and Learning***

U.S. Department of Education, Office of Educational Technology, Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations, Washington, DC, 2023.

- ***Predicting student dropouts with Machine Learning***

Vaarma, M. and Li, H., 2024. Predicting student dropouts with machine learning: An empirical study in Finnish higher education. Technology in Society, 76, p.102474.

- **Early Predicting of Students Performance in Higher Education**

E. Alhazmi and A. Sheneamer, "Early Predicting of Students Performance in Higher Education," in IEEE Access, vol. 11, pp. 27579-27589, 2023, doi: 10.1109/ACCESS.2023.3250702.