

SMART INDIA HACKATHON 2025



TITLE PAGE

- **Problem Statement ID – 25102**
- **Problem Statement Title - AI-based drop-out prediction and counseling**
- **Theme - Smart Automation**
- **PS Category- Software**
- **Team ID-**
- **Team Name - TasselTurners**



AI-based drop-out prediction and counseling system



❖ Proposed Solution that is capable of:

- Unified dashboard : Attendance + Scores + Fee data
- Risk detection engine : Color-coded early alerts
- Role-based dashboards : Admin, Mentor, Faculty, Student
- Smart notifications : Alerts to mentors & guardians

❖ How It Addresses The Problem:

- Detects issues weeks before final exams.
- Helps mentors counsel students before disengagement.
- Easy to deploy in public institutes (low-cost, no heavy infra).

❖ Innovation & Uniqueness

- Combines simple rule-based color coding + ML prediction (transparent logic).
- Plug-and-play: Works with Excel/CSV uploads, no complex setup.
- Counseling recommendation engine – suggests tailored actions (extra classes, financial aid).



TECHNICAL APPROACH

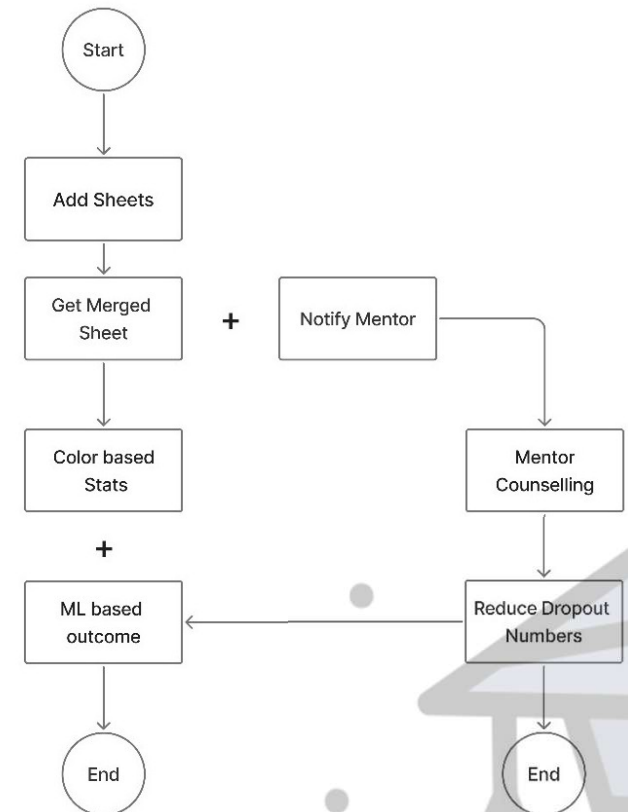


❖ Technologies to be used:

- **Frontend** : React.js , Tailwind CSS , Recharts
- **Backend** : Node.js + Express , Python(flask)
- **ML Engine** : Pandas, Scikit-learn
- **Database** : PostgreSQL (SQL DB)
- **Notifications** : smtplib, python(email)
- **File Handling** : Pandas

❖ Methodology:

Excel Upload → Backend API → Risk Engine → Database →
Dashboards (Admin/Mentor/Faculty/Student) → Notifications→
Counseling → Resolution



❖ Feasibility:

- Uses existing institute spreadsheets → **no extra cost**.
- **Scalable** across multiple departments/colleges.
- Web-based & **Simple UI** → minimal training for faculty/mentors

❖ Potential Challenges & Risk:

- Data Quality(incomplete or inconsistent records).
- Resistance from teachers unused digital dashboard.
- Privacy concerns of students.

❖ Strategies to Overcome:

- Automated data cleaning.
- Simple user interface with tooltips.
- Role based access control for privacy.

IMPACT AND BENEFITS

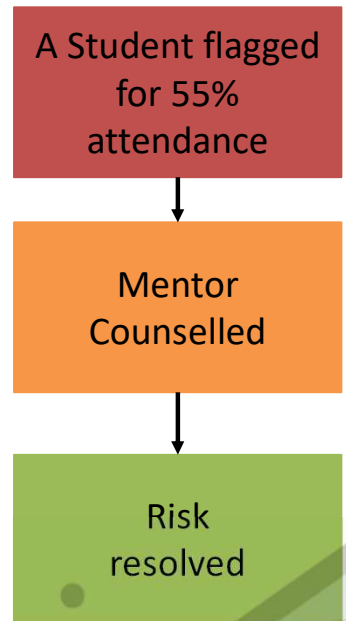


❖ Impact on Target Audience:

- 🎓 Students: Support before disengagement → better academic success.
- 👨🏫 Mentors/Faculty: Clear insights, Early alerts = proactive counseling.
- 🏫 Colleges/Admins : Higher retention rates, improved reputation, data-driven decisions
- 👨👩👧👦 Parents : Early involvement will reduce dropout surprises.

❖ Benefits:

- 👨👩👧👦 Social: Reduces student stress
- 💰 Economic: Saves institutional resources and reputation which boosted by the pass percentage & Affordable solution
- 🎓 Educational : Data-driven mentoring, transparent process
- 🌱 Environmental: A centralized system that reduces manual record-keeping.



“One flag resolved = One future saved.”



RESEARCH AND REFERENCES



- Std IX to X Dropout data:- <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2161543>
- Higher Secondary School Retention Rate:- <https://shorturl.at/THloH>
- College Dropout Data:- <https://shorturl.at/qLQsy>

