< PU CODE
HACKATHON 3.0 >

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Fields	Information
Problem Statement Title	AI Powered Online Harassment Detector
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Institute Name	Parul Institute of Engineering and Technology
Track Name	Cyber Security
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Proposed Solution
AI-Powered Online Harassment Detection System

❌ **Problem**	▪ Rapid rise in online harassment and cyberbullying ▪ Manual moderation is slow and not scalable ▪ Harmful impact on users’ mental health ▪ Lack of real-time detection systems
🎯 **Objective**	▪ Detect online harassment using AI in real time ▪ Classify abuse types and severity ▪ Prevent repeated harassment incidents ▪ Ensure safer digital platforms
⚙️ **Approach**	▪ Analyze user messages using NLP techniques ▪ Apply AI models for harassment classification ▪ Generate risk score for severity detection ▪ Take automated actions (warn, block, report)

USE CASES

- 👥 Social Media Platforms
- 🎓 Online Education Platforms
- 🎮 Gaming & Live Streaming Platforms
- 🏢 Corporate Communication Tools
- 🧠 Mental Health & Child Safety

TECHNOLOGY STACK

🤖 **AI / Machine Learning**	▪ Python ▪ DistilBERT (NLP Model) ▪ HuggingFace Transformers ▪ Scikit-learn
⚙️ **Backend Services**	▪ FastAPI ▪ REST APIs ▪ JWT Authentication
🖥️ **Frontend & Dashboard**	▪ React.js / Streamlit ▪ HTML, CSS, JavaScript
🗄️ **Database & Storage**	▪ MongoDB ▪ JSON-based logs
🔐 **Security & Monitoring**	▪ Role-based access control ▪ Secure API communication
☁️ **Deployment**	▪ Render / Railway ▪ Docker

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PROCESS FLOWCHART

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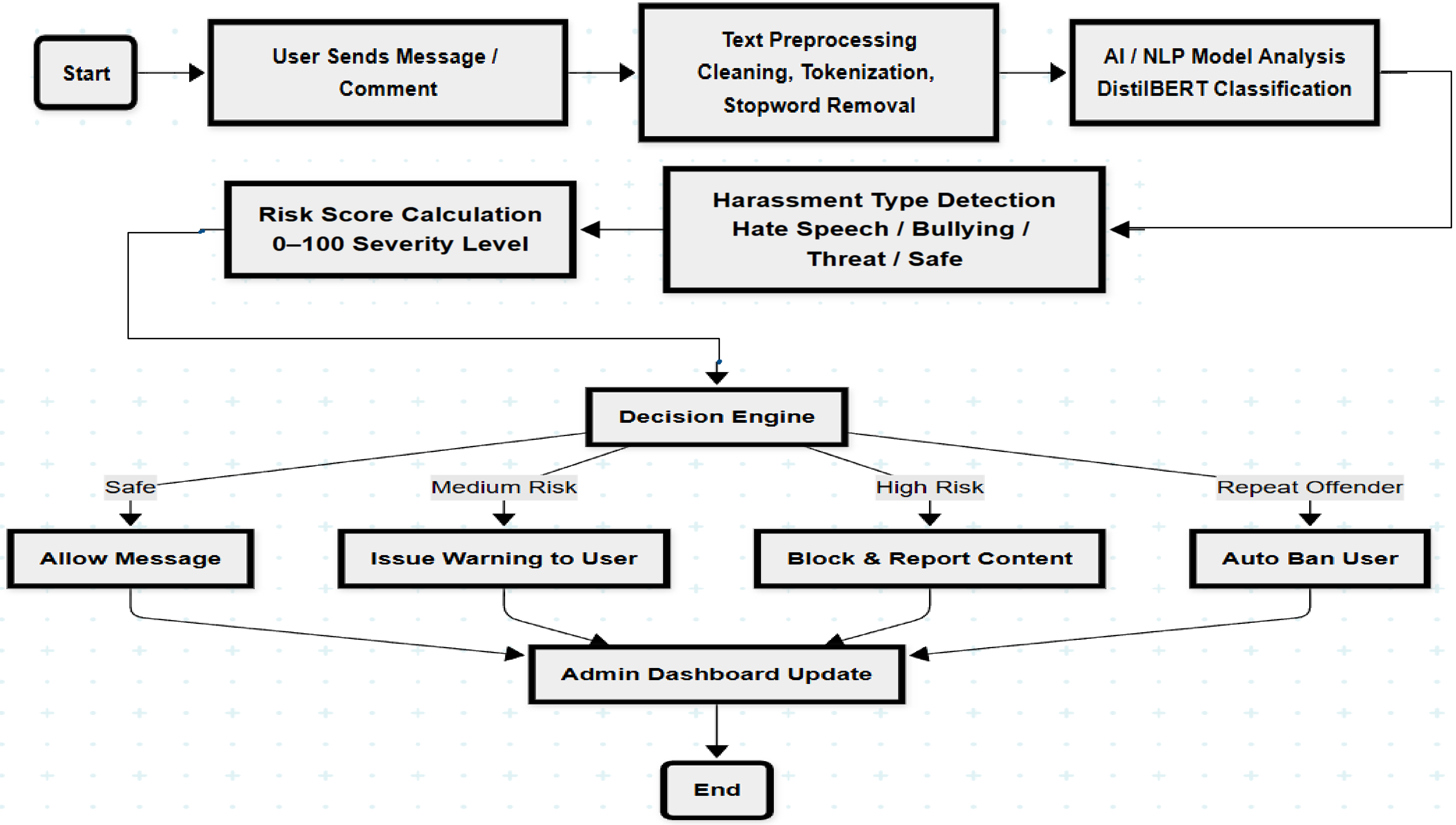
Start
User Sends Message / Comment
Text Preprocessing Cleaning, Tokenization, Stopword Removal
AI / NLP Model Analysis DistilBERT Classification
Harassment Type Detection Hate Speech / Bullying / Threat / Safe
Risk Score Calculation 0–100 Severity Level
Decision Engine
Safe
Medium Risk
High Risk
Repeat Offender
Allow Message
Issue Warning to User
Block & Report Content
Auto Ban User
Admin Dashboard Update
End

DEPENDENCIES

❑ Limited availability of high-quality labeled harassment datasets

❑ Difficulty handling multilingual content, slang, and evolving abusive language

❑ Challenges in detecting sarcasm and context-based harassment

❑ High computational requirements for real-time moderation

❑ Risk of false positives affecting genuine users

❑ Need for continuous model updates to track new abuse patterns

Mitigation Approach

- Use pre-trained transformer models
- Continuous learning using feedback loop
- Multilingual model support
- Human-in-the-loop moderation for edge cases