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FacultyFolio

- **Problem Statement ID –** SIH1613
- **Problem Statement Title-** Automated System for Career Advancements of the Faculties of Higher Education
- **Theme-** Smart Education
- **PS Category-** Software
- **Team ID- 35904**
- **Team Name (Registered on portal):**HexaCode

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FACULTY MANAGEMENT SYSTEM

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Solution Description

Faculty Performance Management System: An advanced web portal has been developed that integrates machine learning, data visualisations, and secure cloud computing to enhance faculty performance tracking and appraisal. The platform offers a seamless and efficient solution for faculty to manage and improve their professional activities.

The portal features:

1. **Faculty Dashboards** for tracking attendance, research submissions, and performance metrics.
2. **Student Review Interface** enabling real-time feedback collection.
3. **Admin Dashboards** with leaderboards, appraisal management, and performance monitoring.
4. **AI-Driven Performance Scoring** calculating comprehensive faculty scores using weighted metrics.

USP

Google Scholar Sync:
Automated tracking for accurate publication records.

AI Insights:
Personalized recommendations for faculty improvement.

Dynamic Leaderboards:
Real-time rankings to drive competition.

Appraisal Forecasting:
Predictive analytics for appraisal and promotion insights.

Top-Tier Security:
Unbreakable session management and anti-DDoS protection.

Student Engagement Interface:
A dedicated review page for students to provide feedback, improving faculty evaluation.

TECHNICAL APPROACH

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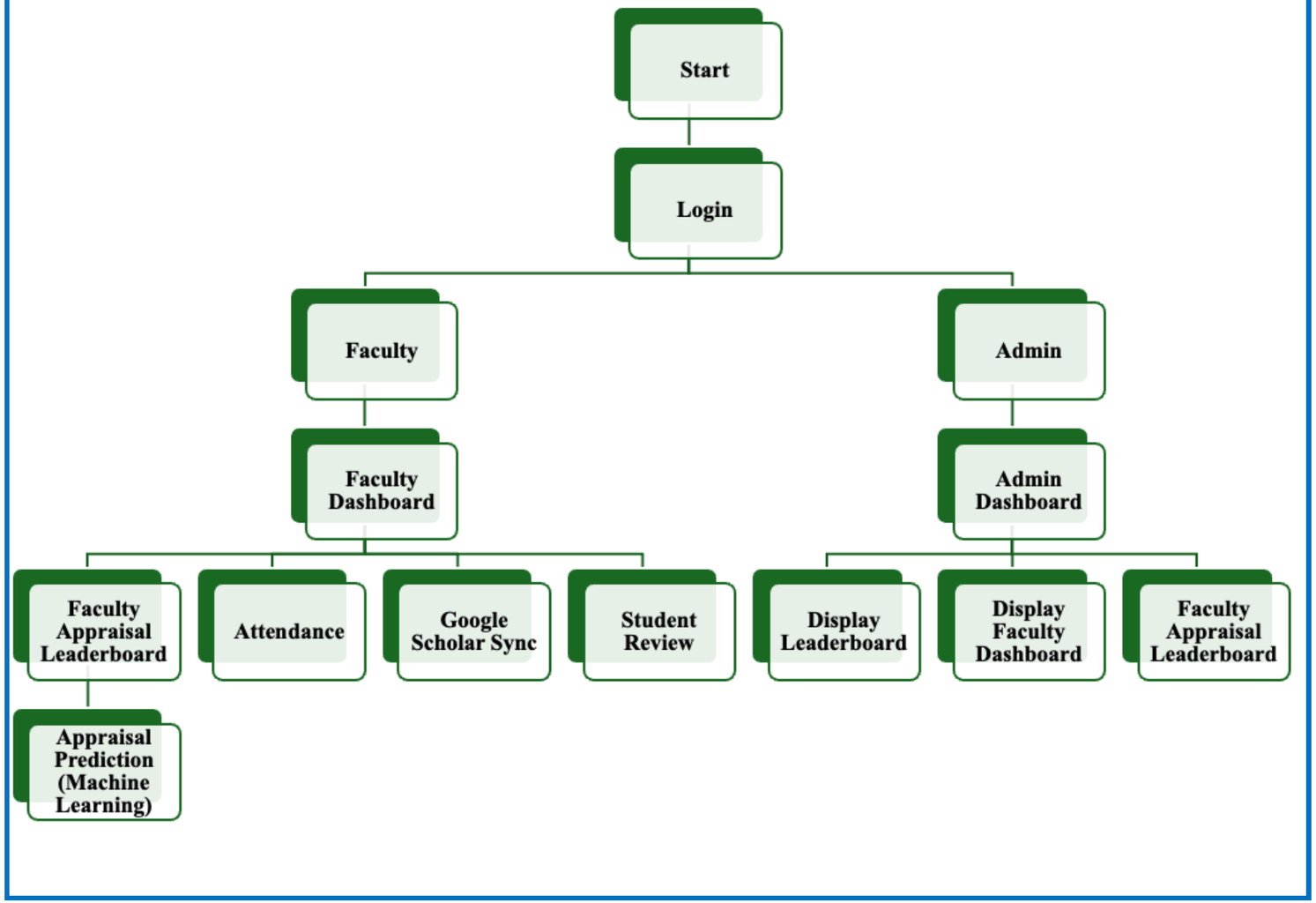

TECH STACK USED:-

- **Web Application**: Next.js, Express.js, Node.js, MongoDB, tailwindcss, DigitalOcean
- **AI/ML**: Pytorch, Sklearn, Matplotlib, Seaborn, pandas & numpy

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FEASIBILITY AND VIABILITY

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Analysis of Feasibility

- **Technical Feasibility**: Our platform's tech stack (Node.js, MySQL, DigitalOcean) ensures **seamless integration** for faculty management with scalable performance.
- **Cost-Efficiency**: Proven to reduce administrative workload by **60%** and **lower operational costs**, especially for small and large institutions.
- **Uptime Assurance**: With **99.9% uptime**, our system efficiently handles data for institutions ranging from 10 to 10,000 faculty members.

Potential Challenges & Risks

- **Adoption Resistance**: Transitioning institutions from **manual to automated** systems may face resistance.
- **Data Security Concerns**: Institutions need reassurance about **secure** handling of sensitive faculty and student data.

Mitigation Strategies

- **User Onboarding & Training**: Providing workshops and **tutorials** to streamline the transition.
- **Robust Security Protocols**: Implement **anti-DDoS** protection, **encryption**, and session management to ensure top-tier data integrity.
- **Scalable Infrastructure**: Modular, **flexible design** ensures easy adaptation for broader use cases beyond education.

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IMPACT AND BENEFITS

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Impact on Target Audience

- **Increased Transparency**: Provides **real-time** tracking of faculty performance, fostering a culture of accountability.
- **Improved Efficiency**: **Streamlines** administrative tasks, **reducing time** spent on manual processes by up to 60%.
- **Data-Driven Decision Making**: Empowers institutions to make informed decisions about faculty **appraisals** and promotions.

Benefits of the Solution

- **Social:** Promotes **transparency**, equity, and a culture of growth within the institution.
- **Economic:** Increases **productivity**, reduces costs, and improves faculty retention.
- **Environmental: Minimizes paper** use and energy consumption through digital processes.

Use Cases and Business Model

Strategic Use Cases:

- Comprehensive Faculty Activity Tracking with real-time performance **analytics.**
- **AI-Powered** Appraisal System delivering data-driven, transparent evaluations.

Revenue Model:

- **Subscription**-Based Model with pricing tiers based on faculty size and feature requirements.
- **Scalable Plans** catering to small schools and large educational institutions.

Strategic Partnerships:

- Collaborative Integrations with **educational institutions** for seamless adoption and market penetration.
- Customizable Solutions tailored to institutional needs, driving **deeper engagement** and long-term partnerships.

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RESEARCH AND REFERENCES

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- Research on Faculty Evaluation and Performance Appraisal .

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- Research paper on linear regression algorithm used for machine learning with Limited Observation.

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