Individual Report

Project Idea 1: AI-Powered Campus Accessibility Map
Keywords: AI, computer vision, accessibility, campus navigation, inclusive design
Problem Statement: Campus maps often lack real-time updates on accessibility barriers (e.g., broken elevators, uneven pavements), making it difficult for students with disabilities to navigate safely. Static maps do not account for dynamic obstacles or temporary closures.

Empathy and User Needs

- Students with Disabilities: Need up-to-date, reliable navigation tools to avoid inaccessible routes.
- Facility Managers: Require a system to report and track accessibility issues campus-wide.
- Visitors: Seek clear guidance on accessible entrances and facilities.

Intended Deliverable:
Uses computer vision via campus cameras and student smartphones to detect obstacles (e.g., blocked ramps, crowded elevators); Updates routes in real time to avoid barriers, with options for wheelchair users, visually impaired students, etc; Allows students to report issues via an app, which the AI verifies and adds to the map; Integrates with building directories to guide users to accessible restrooms, elevators, and study spaces.

Innovation and Feasibility
Innovation:
Obstacle Detection: AI identifies temporary barriers and adjusts routes dynamically; Multi-Modal Alerts: Sends notifications via SMS, app, and digital signage.

Feasibility:
Use existing campus CCTV cameras and LiDAR sensors in smartphones for spatial mapping; Partner with disability advocacy groups for user testing and feedback.

Domain Knowledge Integration
AI/ML: Object detection, pathfinding algorithms, NLP for user reports.

Declaration of GenAI Use
GPT-4 was used to help reorganize and refine the draft.

Project Idea 2: AI-Driven Early Warning System for Student Mental Health
Keywords: AI, mental health, predictive analytics, student well-being, campus counseling
Problem Statement: Mental health crises among students are rising, but early intervention is challenging due to stigma, limited counseling resources, and delayed symptom recognition. Campuses lack tools to identify at-risk students proactively.

Empathy and User Needs

- Students: Need confidential, non-intrusive support to avoid burnout or crisis.
- Counselors: Require data-driven insights to prioritize high-risk cases.
- Administrators: Seek ways to improve campus mental health outcomes without violating privacy.

Intended Deliverable
Analyzes anonymized student data (e.g., library attendance, cafeteria swipes) to detect patterns of distress (e.g., sudden drop in participation); Flags students at risk of mental health crises using ML models trained on historical data; Provides counselors with a prioritized list of at-risk students and recommended interventions.

Innovation and Feasibility
Innovation:
Uses federated learning to analyze data without storing personal identifiers; Encourages students to use the chatbot by rewarding healthy habits (e.g., "Complete a mindfulness exercise to earn a study break badge").

Feasibility:
Integrate with existing campus systems via APIs; Partner with counseling centers for pilot testing and ethical review.

Domain Knowledge Integration
AI/ML: Anomaly detection, federated learning, Anonymization techniques, NLP for chatbot conversations.
Psychology: Early warning signs of mental health issues

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