

WhisperEval PK — Anonymous, Bias-Free Course Feedback Platform

Superior University Lahore — ADP Computer Science Final Year Project (2026–2027)

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1. Executive Summary

WhisperEval PK is a lightweight MERN web application that enables students to submit short, anonymous course feedback and generates a neutral, actionable ‘Course Health Report’ for each course/teacher. The goal is to reduce fear of identification, capture honest insights during the semester (not just at the end), and present department-friendly summaries. AI is used minimally to summarize and structure feedback; all core logic remains deterministic and privacy-first.

2. Problem Statement & Motivation

In Lahore universities (e.g., Superior, UOL, PU), official course evaluations often fail to capture honest student sentiment due to social pressure, lack of anonymity in labs, and long, unclear forms. As a result, course issues (unclear instructions, unfair workload clustering, resource gaps) remain underreported and unresolved. There is no student-friendly, privacy-preserving system to surface actionable feedback while protecting identities.

3. Objectives

- Provide a frictionless, anonymous feedback channel for students.
- Aggregate inputs into clear, bias-free Course Health metrics (clarity, workload, fairness).
- Use a small LLM to summarize free-text comments into neutral, actionable insights.
- Export concise reports suitable for supervisors/HODs and student societies.
- Demonstrate full MERN proficiency with responsible AI integration and strong privacy.

4. Scope (MVP) — 4–5 Pages

- Anonymous Feedback Form (no login; session token only)
- Course/Teacher selector (Program → Semester → Course → Teacher)
- Dashboard with Course Health metrics and trendline
- LLM Summary button (summarize last 50–100 comments)
- PDF export & WhatsApp-friendly text summary

5. Key Features

- Anonymous submission with privacy notices and rate-limiting to prevent spam.
- Tagging: sentiment buckets (positive/neutral/concern) and categories (clarity, workload, assessment, resources).
- Moderation queue (basic keyword filtering; no names/emails allowed).

- Course Health Dashboard: clarity score, workload level, fairness score, recurring issues panel.
- AI-generated neutral summary + suggested improvements (teacher-friendly).
- Data export: PDF for course file, text block for WhatsApp/Email, CSV for research.

6. AI Integration (Lightweight)

A single LLM call (e.g., OpenAI or xAI mini model) is used to convert anonymized, aggregated comments into a short academic summary highlighting strengths, issues, and 2–3 actionable recommendations. Core scoring, spam checks, and metrics are handled deterministically in Node.js to keep costs low and logic transparent.

Example Prompt (backend):

Summarize anonymous course feedback from Lahore students into: (1) top 3 strengths, (2) top 3 issues in neutral tone, (3) 2 practical improvements for teachers. Keep language concise and academic; avoid code or personal data.

7. System Architecture (MERN)

- React (Vite) + Tailwind UI: feedback form, dashboard, reports.
- Express + Node: REST APIs, anonymization, rate limiting, LLM endpoint.
- MongoDB Atlas: collections — Courses, Teachers, Feedback, Summaries, Reports.
- Deployment: Vercel/Netlify (frontend), Render/Railway (backend), free tiers to minimize cost.

Minimal Data Model (MVP)

Collection	Core Fields
User (optional)	_id, role(optional), createdAt
Course	_id, program, semester, title, teacherId
Teacher	_id, name, department
Feedback	_id, courseId, sessionToken, sentimentTag, categoryTags[], text, createdAt
Summary	_id, courseId, window, strengths[], issues[], suggestions[], createdAt

8. Privacy, Ethics & Academic Integrity

- No account required for submission; only a random session token stored.
- Strip emails, phone numbers, names via regex before saving; reject PII.
- Rate limit per course per day; basic keyword moderation; report/flag option.
- LLM receives only aggregated, anonymized text; never raw identifiers.
- Clear disclaimers: platform is for constructive academic feedback, not harassment.

9. Project Plan & Timeline (2–3 Months)

Week	Milestones
Week 1	Requirements, schema, React skeleton, course/teacher seed data
Week 2	Anonymous form + validation + spam/PII filters
Week 3	Dashboard metrics (clarity/workload/fairness), charts
Week 4	LLM summary endpoint, caching, cost limits

Week 5	Report exports (PDF/text), polishing UI
Week 6	Testing with classmates, deployment, poster & viva prep

10. Risks & Mitigation

Risk	Mitigation
Spam/abuse	Rate limiting, keyword filter, manual moderation switch.
Low participation	CR outreach, societies, incentives like badges/certificates.
LLM cost overruns	Cache summaries, cap requests per course/week, use mini models.
Perceived bias	Neutral phrasing templates; show raw tag counts alongside summaries.

11. Technopreneurship & Sustainability

Target: Lahore students (Superior, UOL, PU, UCP, FAST). Freemium model: free access to feedback and basic summaries; Pro (PKR 200/month) unlocks historical views, department comparisons, and PDF branding. Additional revenue via campus ads (print shops, hostels, stationery) and institutional dashboards (privacy-safe). Costs remain low using free-tier hosting and minimal LLM usage.

12. Evaluation Metrics

- At least 50 unique anonymous submissions across 3–4 courses in pilot.
- Average time to submit < 60 seconds.
- LLM summary satisfaction score $\geq 4/5$ from pilot students.
- Supervisor/HOD acceptance of report format (qualitative).

13. Deliverables

- Deployed web app (frontend + backend).
- Source code (GitHub) with documentation.
- Sample anonymized dataset + generated reports.
- FYP report (SRS, design, testing), poster, and demo video.

14. Conclusion

WhisperEval PK addresses a subtle but critical gap in Pakistan's educational ecosystem: honest, usable, and safe course feedback. With a simple MERN stack, light AI summarization, and strong privacy, the project is feasible within 2–3 months for a 1–2 person team and has clear startup potential beyond the FYP.

Appendix A — API Endpoint Sketch

Endpoint	Description
POST /api/feedback	Create anonymous feedback (validates, strips PII).
GET /api/courses	List programs/semesters/courses/teachers.
GET /api/course/:id/metrics	Return course health metrics and tag counts.
POST /api/course/:id/summarize	Run LLM summary (cached).
GET /api/course/:id/report	Generate PDF/text summary.

Appendix B — Non-functional Requirements

- Performance: p95 API latency < 400ms on free tier.
- Security: input validation, helmet, rate limiting.
- Privacy: store only anonymized text; no emails/roll numbers in feedback.
- Reliability: daily backups; environment variable secrets.
- Usability: mobile-first design (students often submit via phones).