AI-Powered Study Abroad Information & Evaluation App

Design Specification (Phase 1–5)

1. Application Information Architecture & User Flow

The application is designed around two tightly coupled core functionalities: (i) structured presentation of global master's admission information, and (ii) AI-driven applicant–program matching and admission success analysis.

1.1 Home Page – Region Selection

The home page serves as a region selector. Supported regions in Phase 1 include Hong Kong & Singapore, Europe, and North America. Each region acts as an entry point into a curated QS-ranked university list.

1.2 QS University Ranking by Region

Within each region, universities are displayed in QS ranking order. Each item includes QS rank, university name, country/city, and admission difficulty tags (e.g., Reach, Match, Safety), which may later be dynamically assigned by the AI module.

1.3 University Detail Page

Selecting a university opens its profile page, which aggregates all available master's programs, official links, and structured admission requirements.

2. Data Layer Design: Information & Background Repositories

The system relies on two primary data repositories: a structured public admission information database and a historical applicant background case database.

2.1 University & Program Information Database

This database stores region, QS ranking, university profiles, and detailed program-level admission requirements such as GPA thresholds, language scores, standardized tests, application deadlines, tuition, and material checklists.

2.2 Historical Admission Background Case Database

Historical cases represent anonymized applicant profiles with known admission outcomes. Each case includes academic background, test scores, research and internship experience, target program, admission year, and final result (offer/reject/waitlist).

3. AI Evaluation Module: Matching, Probability & Improvement Analysis

The AI module provides explainable and data-driven admission insights, focusing on program suitability, admission probability estimation, and targeted improvement suggestions.

3.1 Program Recommendation (Suitability Matching)

An initial rule-based and score-based filtering process evaluates hard constraints (e.g., minimum language requirements) followed by multi-factor matching across GPA, background relevance, and test scores. Programs are categorized into Reach, Match, and Safety tiers.

3.2 Admission Probability Estimation

Admission probability is estimated using a hybrid approach: (i) similarity-based case retrieval from historical data, and (ii) statistical or machine learning models such as logistic regression. Results are presented as probability ranges with confidence levels.

3.3 Improvement Suggestions & Probability Gain Estimation

The system performs counterfactual simulations by modifying improvable attributes (e.g., language score improvement, additional projects). The resulting probability difference quantifies the expected admission probability gain for each suggestion.

4. Phase 1 Implementation Scope & Deliverables

Phase 1 focuses on delivering a fully functional offline MVP that demonstrates the complete user flow and AI reasoning pipeline.

- Region-based home page and QS-ranked university lists
- University and program admission information display
- Structured local database with sample data
- Manual resume/background input form
- AI-based program recommendation with admission probability ranges
- Actionable improvement suggestions with estimated probability gains

5. Risk Management & Compliance Considerations

Given the predictive nature of admission probability estimation, the application must clearly communicate that results are probabilistic estimates rather than guarantees. All predictions should be accompanied by data source transparency and confidence indicators.

User privacy and data protection are critical. Applicant resumes and background data must be securely stored, anonymized when used for model training, and processed only with explicit user consent.