AI Solution Proposal

A. Problem Statement

Counterfeit and substandard medicines are widespread in Nigeria's markets, patent medicine stores and some pharmacies, and buyers have no easy way to spot them at the point of purchase. These fake drugs cause treatment failure, drug resistance, deaths and financial loss. Current checks like NAFDAC's scratch codes have limited coverage and can be copied, so a quick phone-based verification tool is needed to stop harm before the drug is used.

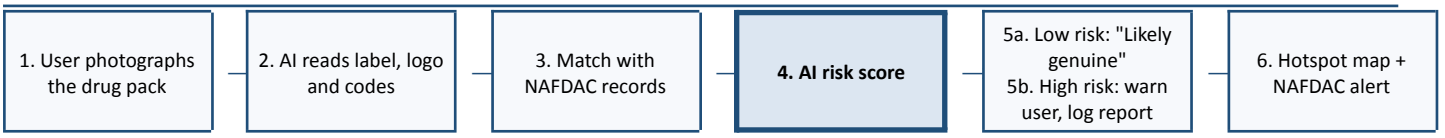
B. Target Users

User	Current challenge	How the problem affects them
Patients and caregivers	Cannot spot fakes by eye; many cannot read small print or English labels	Wasted money, failed treatment, health risk
Pharmacists and patent medicine vendors	Buy from wholesalers without a quick way to verify stock	Lost reputation, sanctions, harm to customers
Community health workers	Dispense drugs in rural areas far from regulators	Patients lose trust in the clinic
NAFDAC and state regulators	Rely on slow, manual market raids and tip-offs	Cannot see where fakes are spreading in time
Genuine manufacturers	Brands and packaging are copied	Lost sales and damaged brand trust

C. Proposed AI Solution

MedVerify NG is a mobile app (with a WhatsApp option) that tells a user within seconds whether a drug pack is likely genuine, suspicious or unregistered. The user photographs the pack; the app compares its packaging, label text, NAFDAC number and batch details with registered product records (such as NAFDAC's Greenbook) and images of verified genuine packs. It moves verification to the point of purchase, before the drug is swallowed, and every scan feeds a location-based hotspot map sent to NAFDAC as an early warning. It is useful because it needs no scratch code, works on any packed product, gives results in English, Pidgin, Hausa, Yoruba and Igbo (including voice), and serves consumers and regulators with one tool.

D. How the Solution Works



The user scans the pack; AI reads and checks it, matches it to registered records and produces a risk score. A high score warns the user and logs the scan location, which feeds the hotspot map and alerts NAFDAC.

E. Where AI Is Needed

AI is used only where fixed rules cannot cope with messy real-world images and patterns. The record lookup itself is a normal database search and does not need AI.

AI component	What it does	Why AI is necessary
Text recognition (OCR)	Reads NAFDAC number, batch, expiry and names from blurry, curved or poorly lit photos	Pack photos vary too much for simple rules to read reliably
Image recognition	Compares logo, colours, fonts and layout with verified genuine packs	Good fakes differ in subtle visual details humans miss
Risk scoring	Weighs all signals (visual match, record match, expired or duplicated batch) into one score	Signals conflict; a trained model balances them better than yes/no rules
Hotspot detection	Finds clusters of suspicious scans by location and time	Spotting emerging patterns across thousands of scans needs pattern analysis

F. Expected Outcome

- **Improved access to information:** anyone with a phone can verify a drug in seconds, in their own language.
- **Better decision-making:** patients and pharmacists reject suspicious stock before use or resale.
- **Faster enforcement and reduced cost:** NAFDAC targets raids using live hotspot maps instead of blind inspections.
- **Better health outcomes:** fewer treatment failures, less drug resistance and more trust in genuine brands.

G. Risks and Limitations

Risk	Impact	Mitigation
Incorrect AI outputs	A fake marked "genuine" causes harm; a genuine drug marked "fake" hurts sellers	Show confidence levels, never claim "100% safe", route high-risk cases to pharmacist or NAFDAC review
Availability of data	Incomplete records and few reference images weaken accuracy	Partner with NAFDAC and manufacturers for pack images and batch data
User adoption and access	Low smartphone use, poor internet and low literacy in rural areas	WhatsApp and USSD options, voice results, pharmacist-assisted scanning
Data privacy and security	Location data could be misused; counterfeiters could probe the system	Comply with the Nigeria Data Protection Act 2023, anonymise locations, rate-limit scans

H. Measuring Success

Success would be judged over a 12-month pilot in Lagos, Kano and Onitsha (targets proposed, to be agreed with NAFDAC).

Indicator	How it is measured	Proposed target
Detection accuracy	Share of results confirmed correct by NAFDAC lab tests on sampled packs	90% or higher
Response time	Time from photo upload to result shown	Under 10 seconds
Active users	Monthly users completing at least one scan	100,000 by month 12
Enforcement impact	Verified hotspots acted on by NAFDAC within 30 days	50% or more
User satisfaction	In-app rating and short surveys	4 out of 5 or higher