WELLNEST: ENHANCING USER ENGAGEMENT AND PERSONALIZATION IN MOBILE WELLNESS THROUGH AI AND SENSOR TECHNOLOGY

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AGENDA

>>>>> MOTIVATION & PROBLEM

>>>>> LITERATURE REVIEW

>>>>> OBJECTIVES

>>>>> ARCHITECTURE & STACK

>>>>> MAIN FEATURES

>>>>> EXPERIMENTS & RESULTS

MOTIVATION AND PROBLEM

>>>>> POOR ENGAGEMENT AND RETENTION

>>>>> LACK OF PERSONALIZATION

>>>>> FRAGMENTED HEALTH APPS

THE SCIENCE BEHIND THE APP

PROVEN IMPACT OF GAMIFICATION

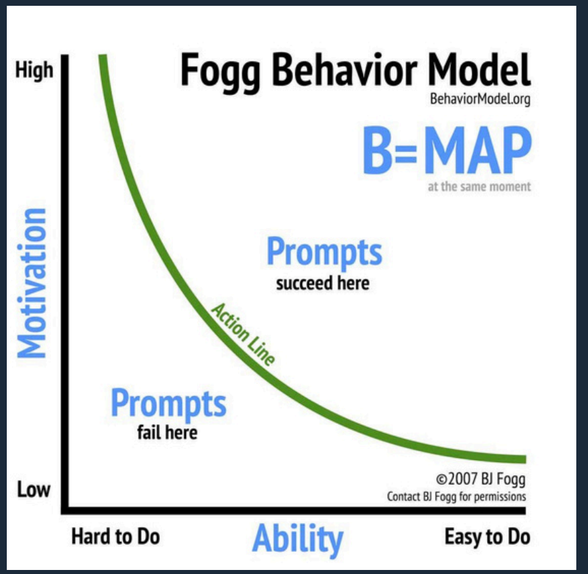
Gamified apps increase step count by
~2000/day

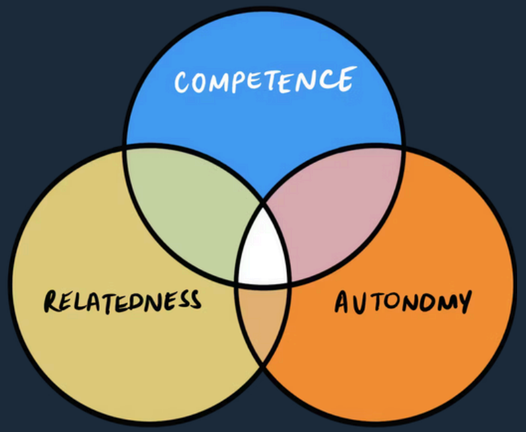
MOTIVATION MODELS THAT DRIVE BEHAVIOR

Self-Determination Theory &
Fogg Behavior Model

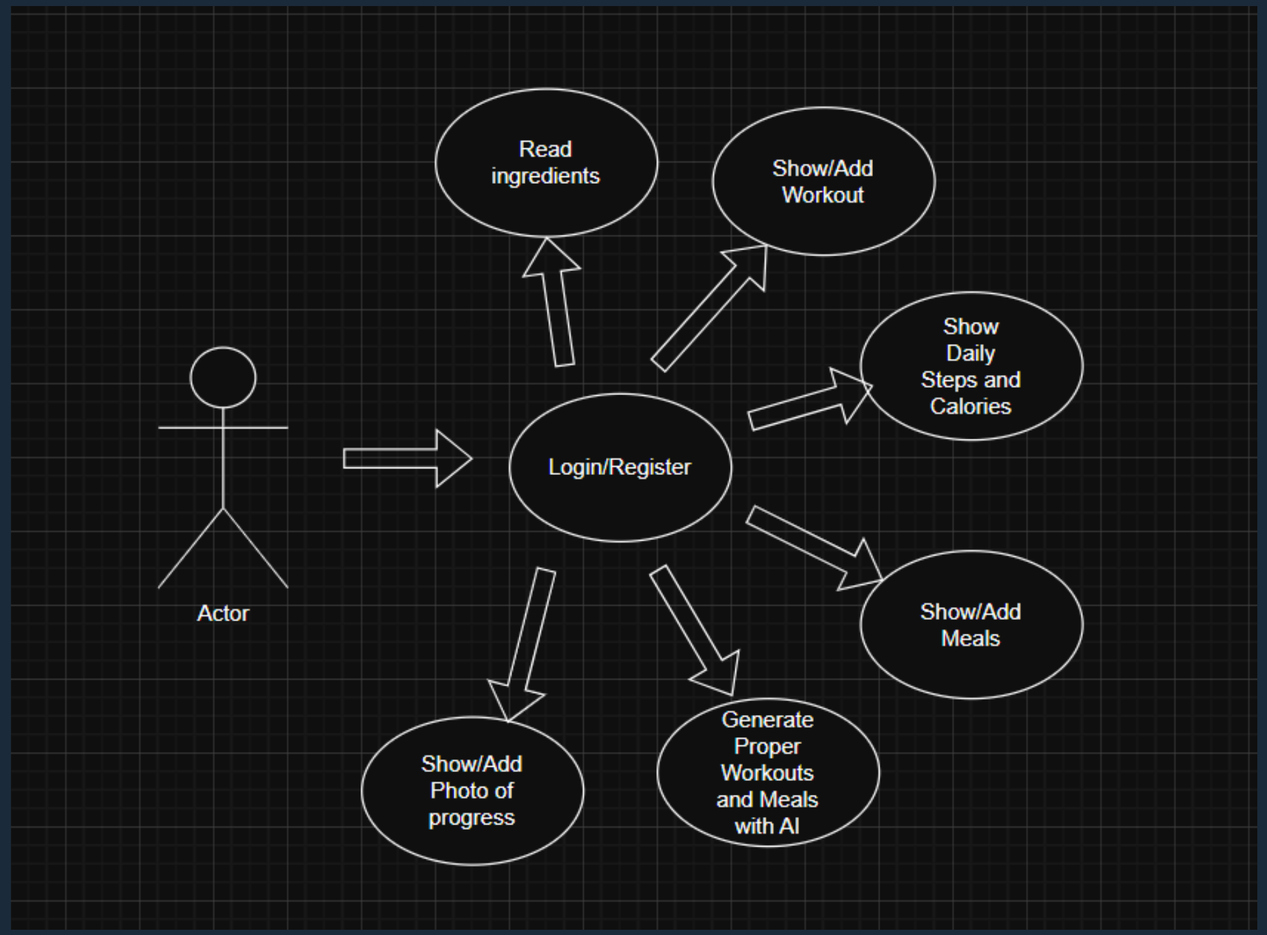
WHERE CURRENT APPS FALL SHORT

Existing apps use static content,
low AI integration





OBJECTIVES & SOLUTION



SOLUTIONS

Unified app: activity, meals, workouts

Personalized AI suggestions

OCR ingredient analysis

Secure JWT-based login

Gamification engine

Notifications

ARCHITECTURE AND TECHNOLOGY STACK

FRONTEND: REACT NATIVE + EXPO

Enables fast, cross-platform mobile development with a native feel

BACKEND: NODE.JS + EXPRESS

Lightweight and scalable server framework for REST APIs

FIREBASE

fast, scalable and real-time database syncing

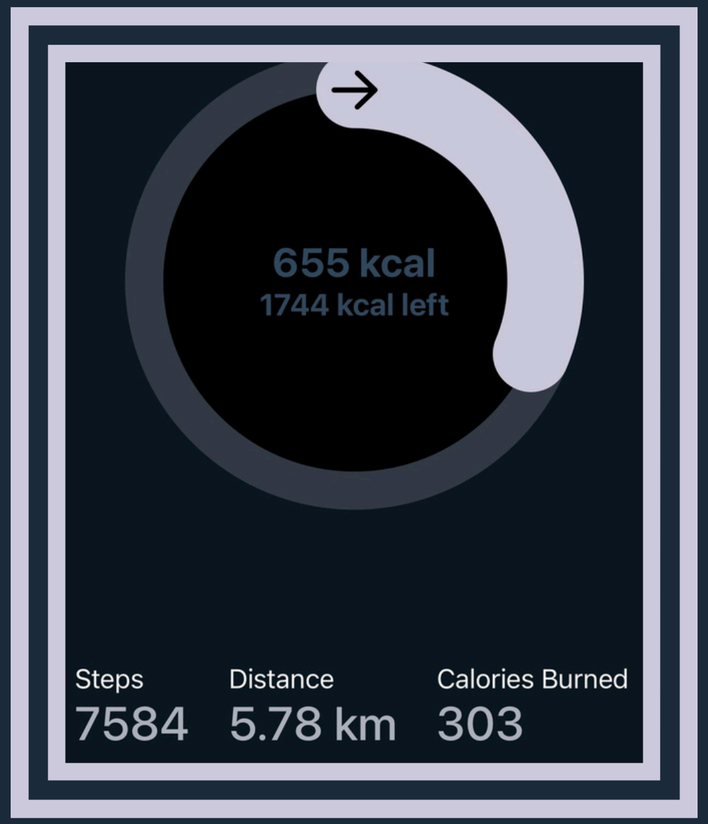
OCR: AZURE COMPUTER VISION

reliable, accurate text extraction from images via cloud AI

AI: GROQ SDK

high-performance AI processing optimized for real-time recommendations

ACTIVITY TRACKING & CALORIES



>>>>> EXPO PEDOMETER API

>>>>> DISTANCE = STEPS × 0.762

>>>>> CALORIES = STEPS × 0.04

>>>>> DAILY TRACKING

AI RECOMMENDATIONS

GROQ SDK
INTEGRATION

MEAL SUGGESTIONS:
BASED ON CALORIES AND INGREDIENTS

WORKOUT PLANS:
DAYS, MUSCLE GROUPS, NOTES

OCR INGREDIENT SCANNER

- AZURE OCR API
- SCANS TEXT FROM FOOD LABELS
- CLASSIFIES INGREDIENTS: GOOD/BAD/NEUTRAL
- LOCAL DATABASE

EXPERIMENTS & RESULTS

>>>>> OCR ACCURACY TESTED WITH CLEAN AND BLURRY IMAGES

>>>>> AI RESPONSE TIME < 2 SECONDS

>>>>> MANUAL TESTING VIA POSTMAN

Test Scenario	Expected Outcome	Result	Status
No image selected before OCR	Prevent API call, show error message	☑️ Handled	☑️ Passed
Low-quality / blurry image	Partial or failed text extraction	⚠️ Partial	☑️ Passed
Partially visible ingredient list	Extract available data, ignore missing parts	☑️ Handled	☑️ Passed
Ingredient not in database	Mark as “unknown,” show fallback reason	☑️ Handled	☑️ Passed
Simulated API failure (e.g., wrong key/no internet)	Graceful error message shown to user	☑️ Handled	☑️ Passed

DEMO

>>>>> CONCLUSIONS <<<<<