המכללה האקדמית להנדסה בכרמיאל
בראודה

PARKSMART: PERSONALIZED HEALTH INSIGHTS FOR PARKINSON'S PATIENTS

A personalized system that analyzes the effects of nutrition, activity, symptoms, and medication on mood, physical state, and Parkinson's condition, based on daily user-generated data.

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Background and Problem

Parkinson's patients experience daily fluctuations in mood, physical state, and Parkinson's symptoms. While many track this information, they lack tools that translate raw data into clear, personalized insights. Our project addresses this gap by enabling patients to upload their daily data and receive automated, easy-to-understand analysis of how factors like nutrition, activity, and medication affect their health — with the goal of supporting self-management and improving quality of life.

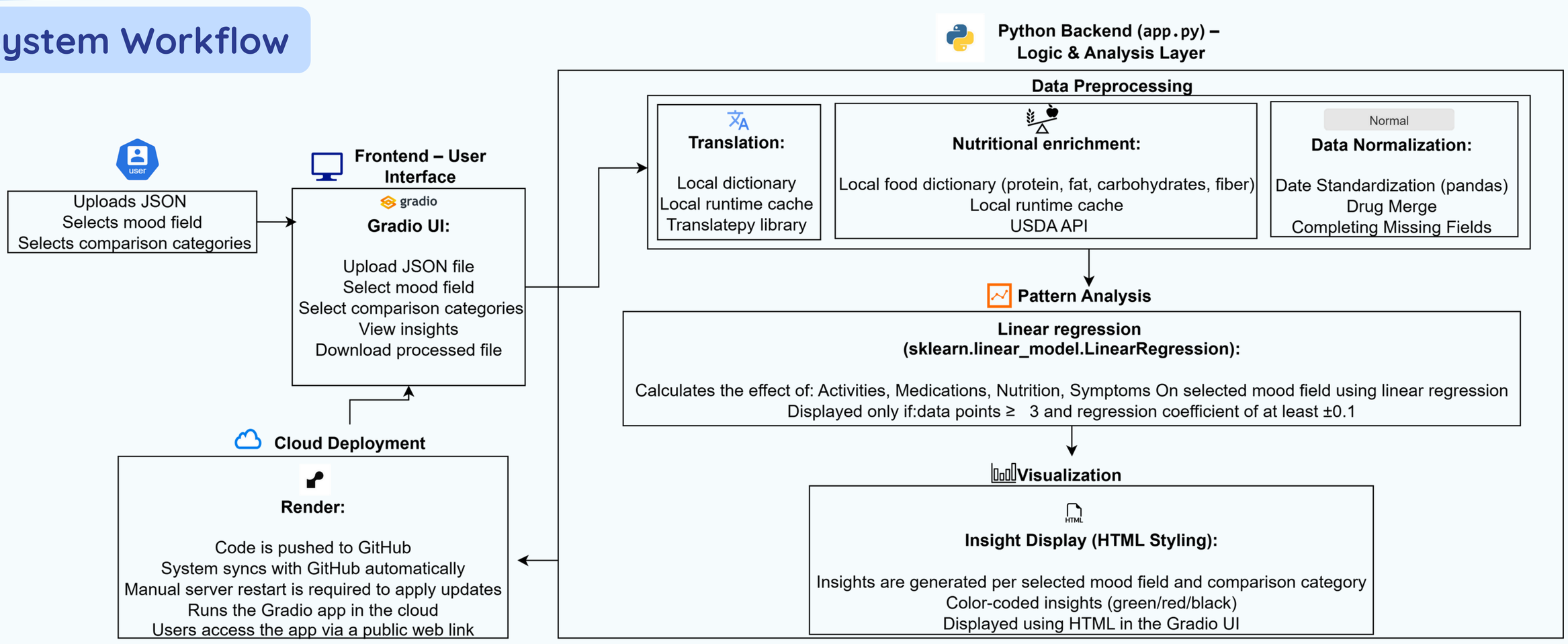
Requirements and Goals

- Enable users to upload structured daily JSON files
- Analyze how lifestyle factors (nutrition, activity, medications, symptoms) influence selected health indicators (mood, physical state, Parkinson's state)
- Present clear, personalized insights in a user-friendly interface
- Support multilingual data (Hebrew/English) and complex food entries

Challenges and Solutions

- Multilingual support: Uses a 3-layer translation system — local dictionary → runtime cache → Translatepy library
- Incomplete nutrition data: Uses a 3-layer enrichment system — local nutrition dictionary → runtime cache → USDA FoodData Central API
- Inconsistent data structure: Standardizes timestamps, auto-fills missing fields, and merges redundant ones

System Workflow



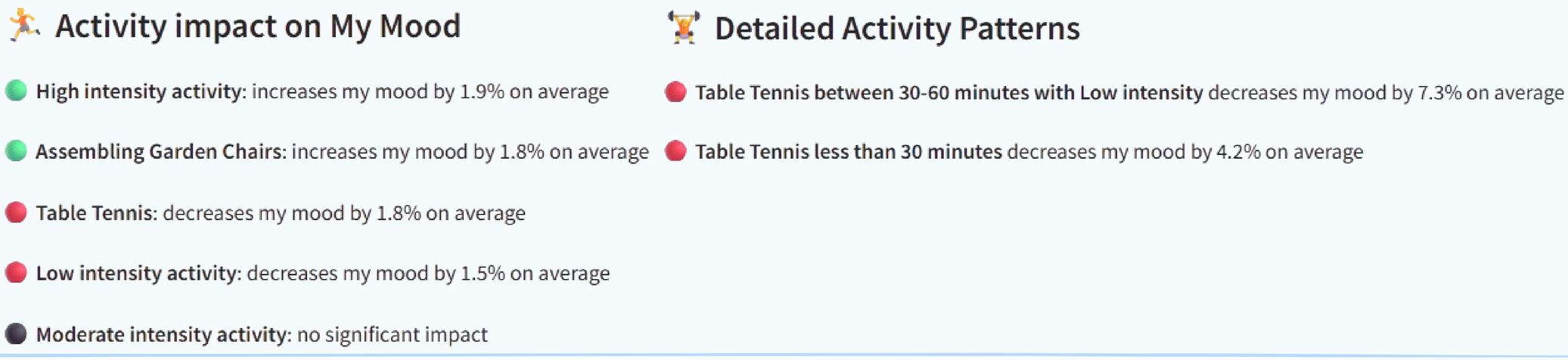
Outcomes and Evaluation

- Processing time: 90 seconds (target: ≤ 2 minutes)
- SUS score: 82.3 (target: ≥ 70)
- Task success rate: 100% (target: ≥ 90%)
- Insight quality: shown only if ≥ 3 observations and regression coefficient of at least ±0.1

Conclusion and Future Work

ParkSmart helps Parkinson's patients gain personal insights from daily data about how lifestyle factors affect their condition.
Future plans include adding recommendations, supporting more chronic diseases, and enabling early detection of health changes.

Insight Display



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