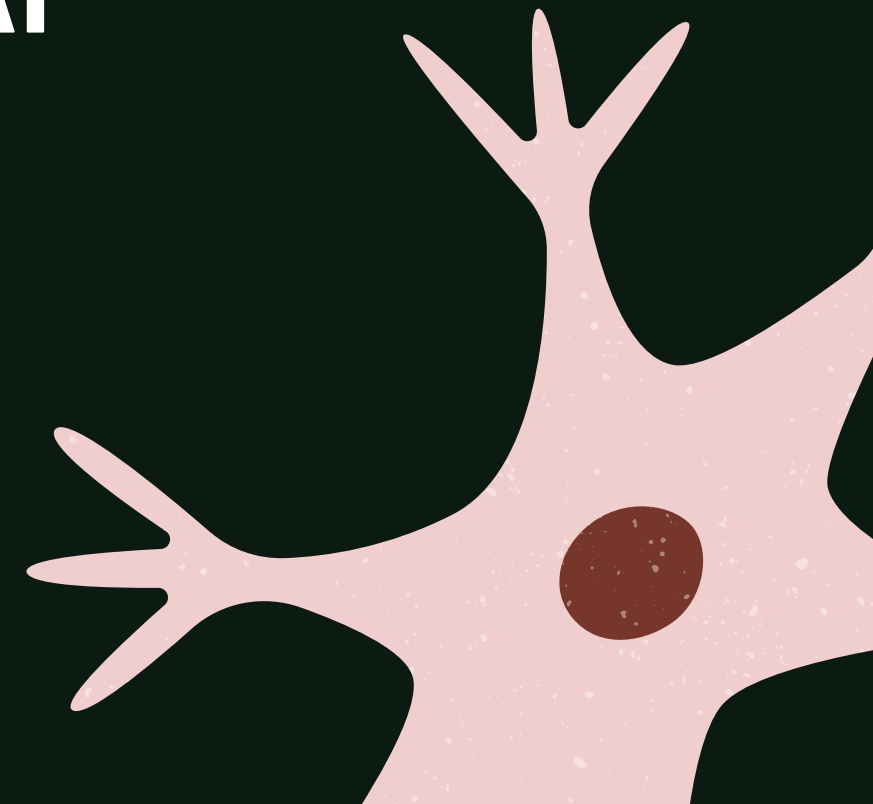
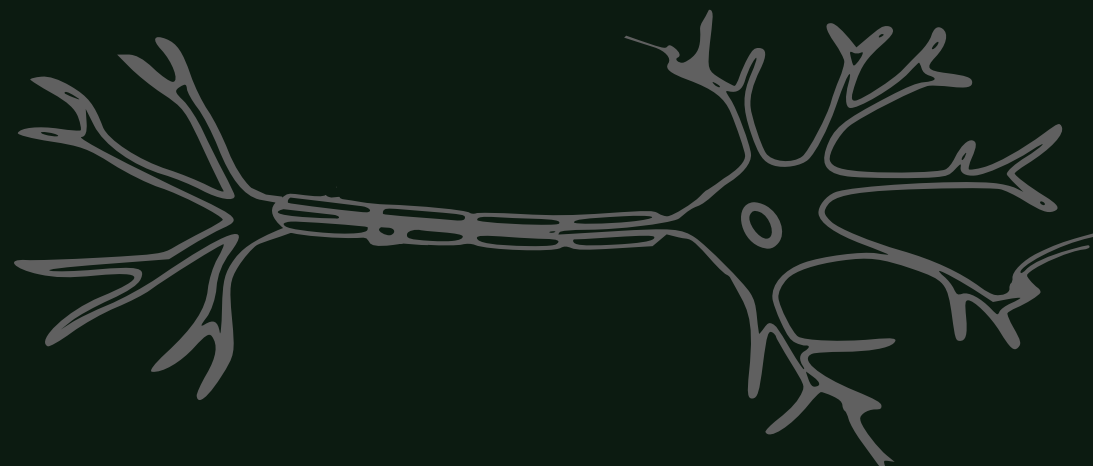
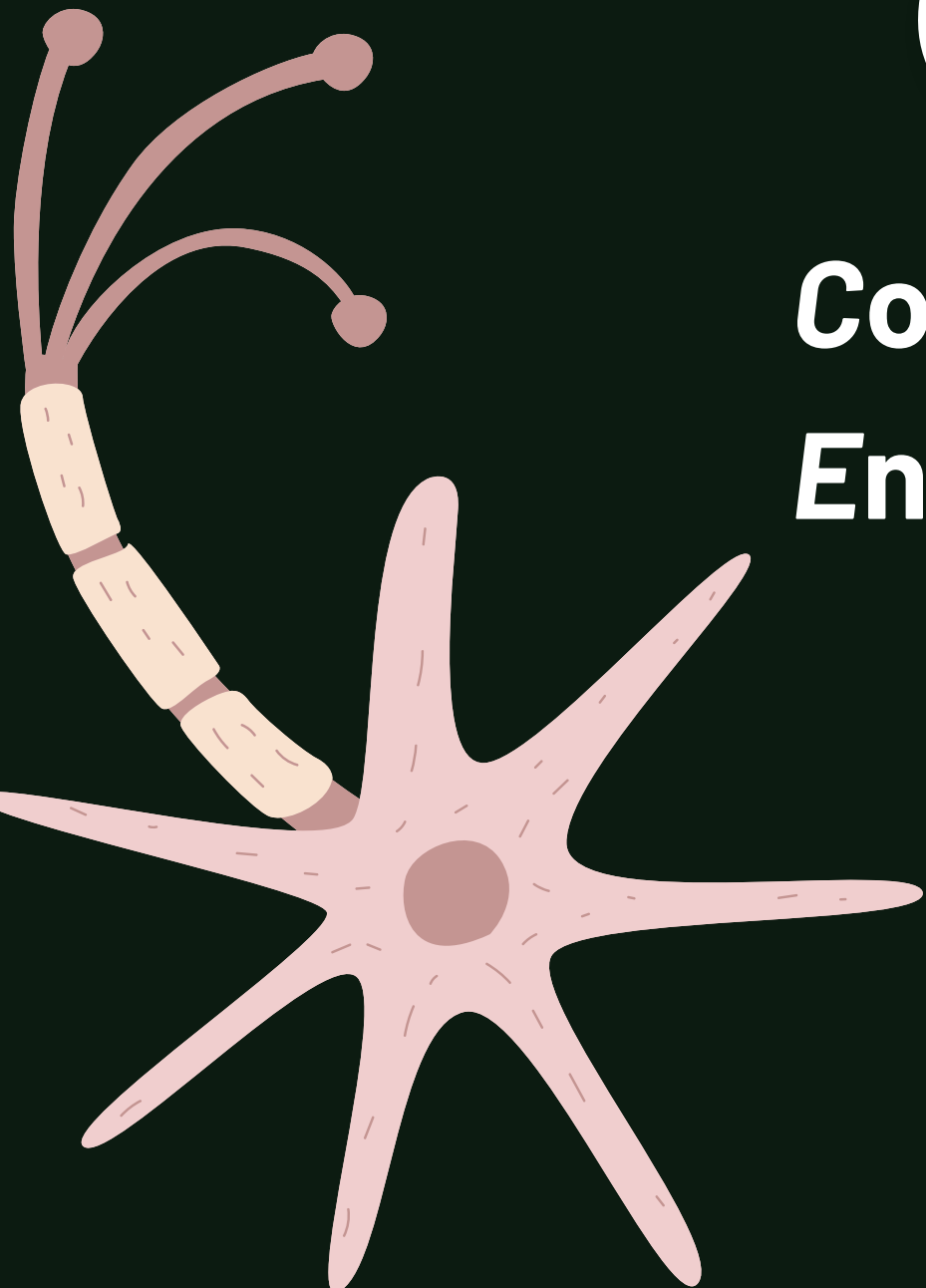


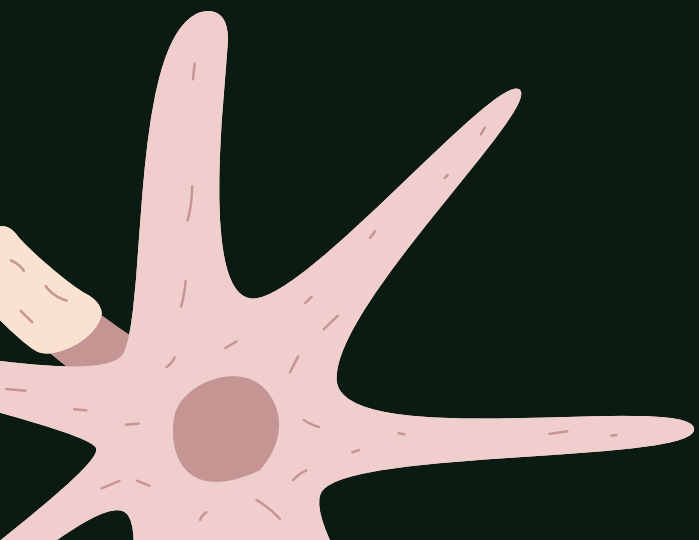
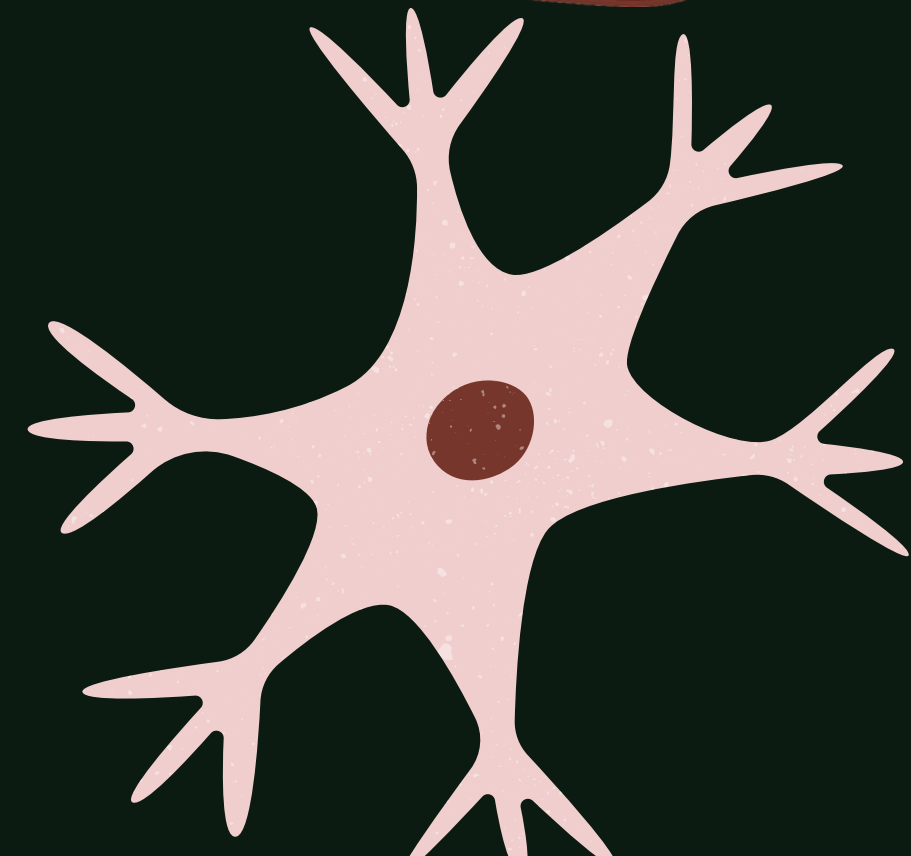
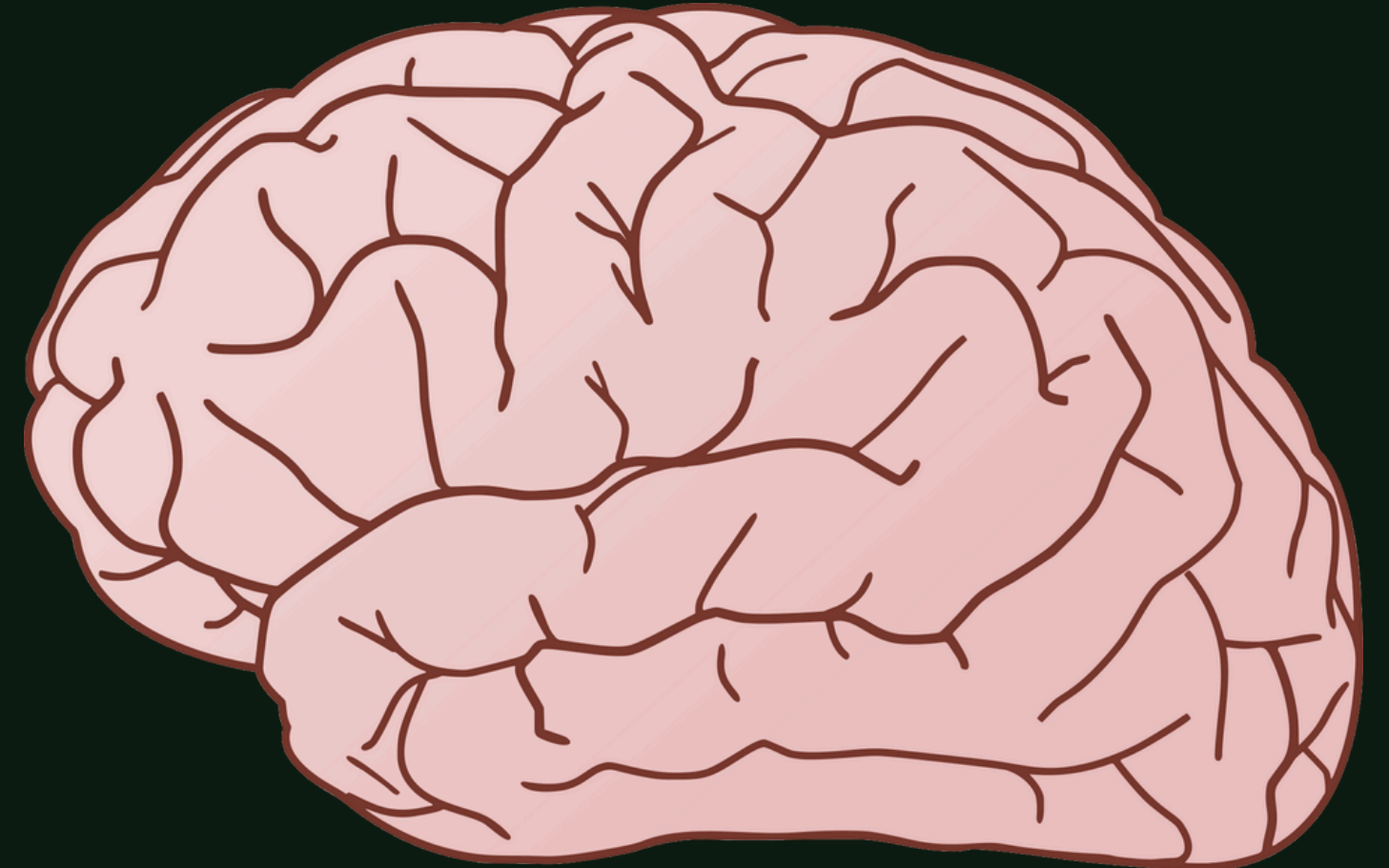
CORTEXA AI

**Cognitive Observation & Risk Tracking
Engine for Exploratory Analysis using AI**

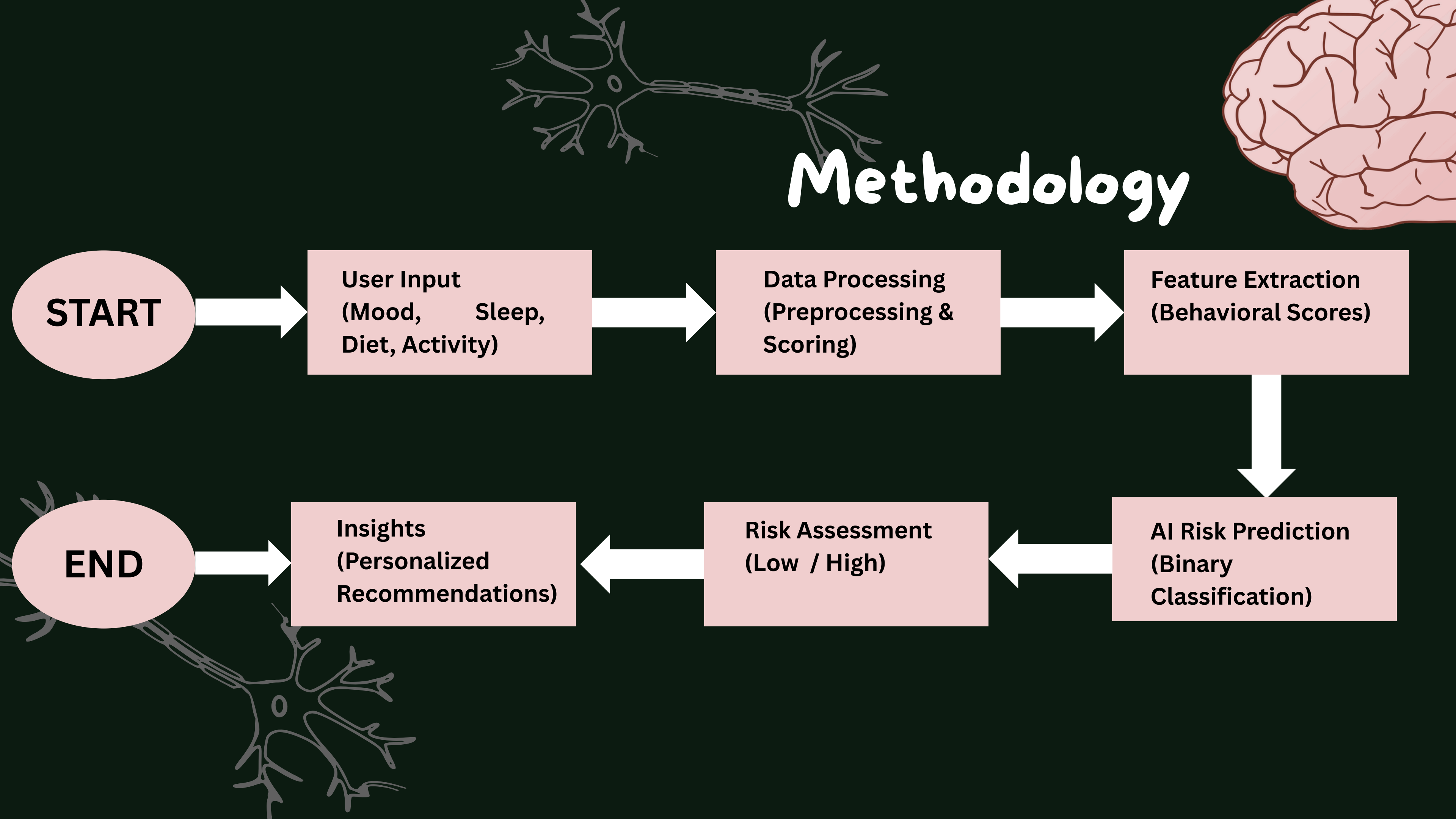


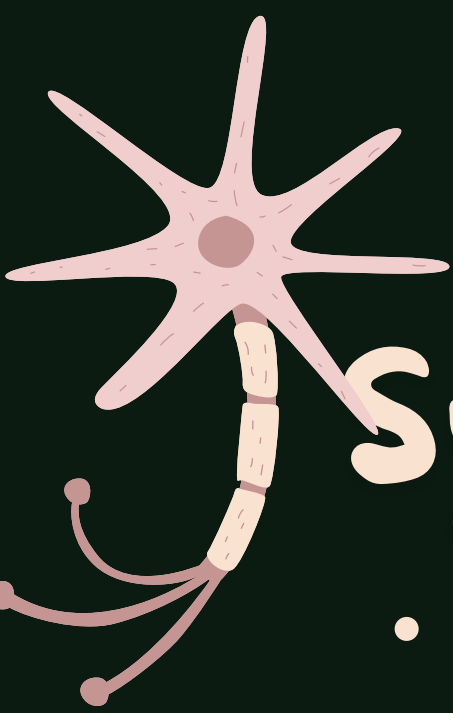
Problem Statement

- *Neurological disorders are often detected at later stages.*
- *Lifestyle and behavioral data are rarely used for early risk prediction.*
- *Existing systems lack personalized, AI-driven neurological risk assessment.*



Methodology





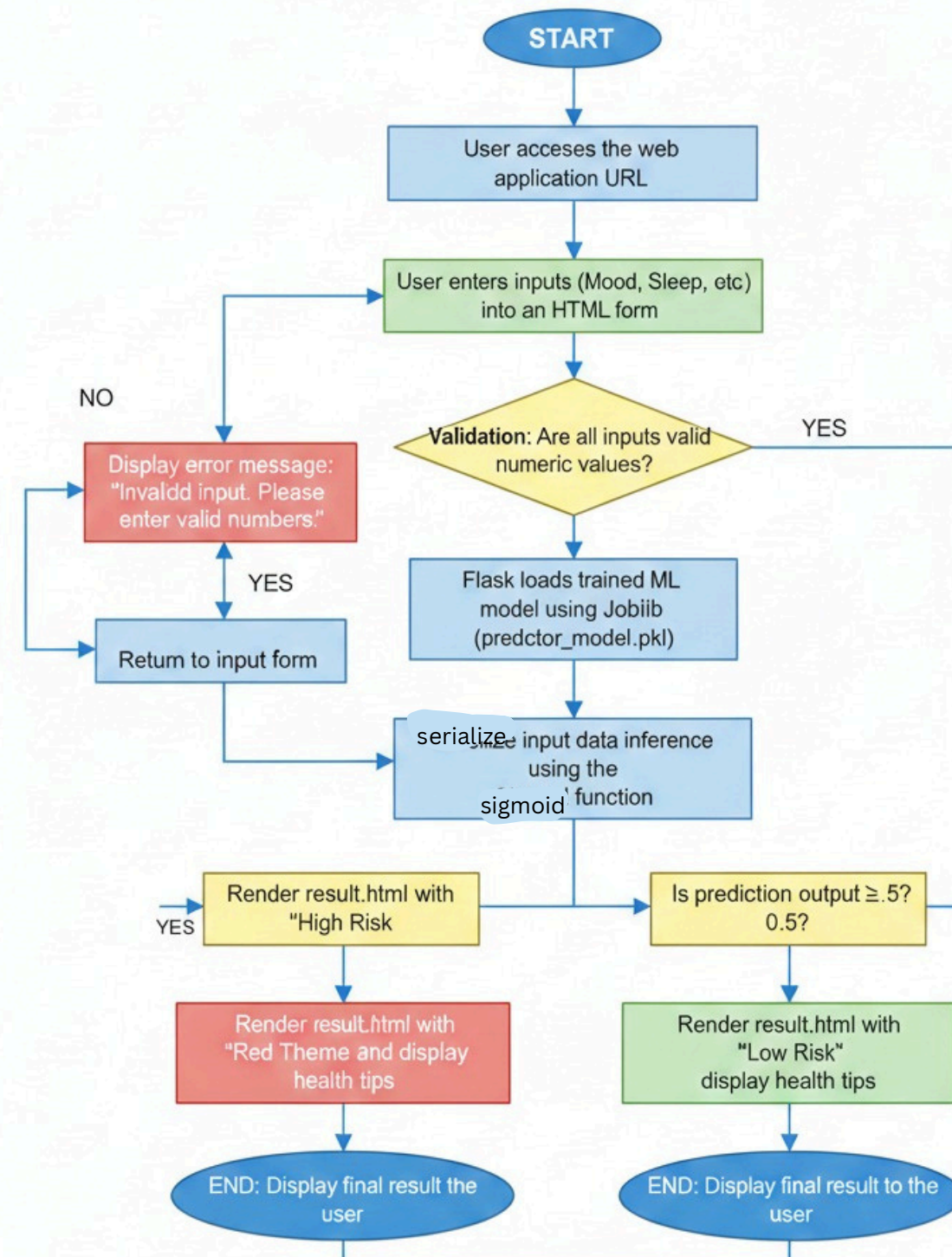
System Design

- *High-Level Architecture: Client-Server Model.*
- *Frontend: HTML5, CSS3, and Jinja2 templates for a responsive user dashboard.*
- *Backend: Flask (Python) handling the request-response cycle and model inference.*
- *Design Diagrams:*
- *ER Diagram: Models the logical entities: User, Input Metrics, and Prediction results.*
- *Data Flow Diagram (Level 1): Illustrates the movement from raw user input to the processed AI prediction.*
- *Input Requirements: Validates four key parameters: Mood Score (1-10), Sleep Hours (0-15), Activity Rating (1-10), and Diet Quality.*

-

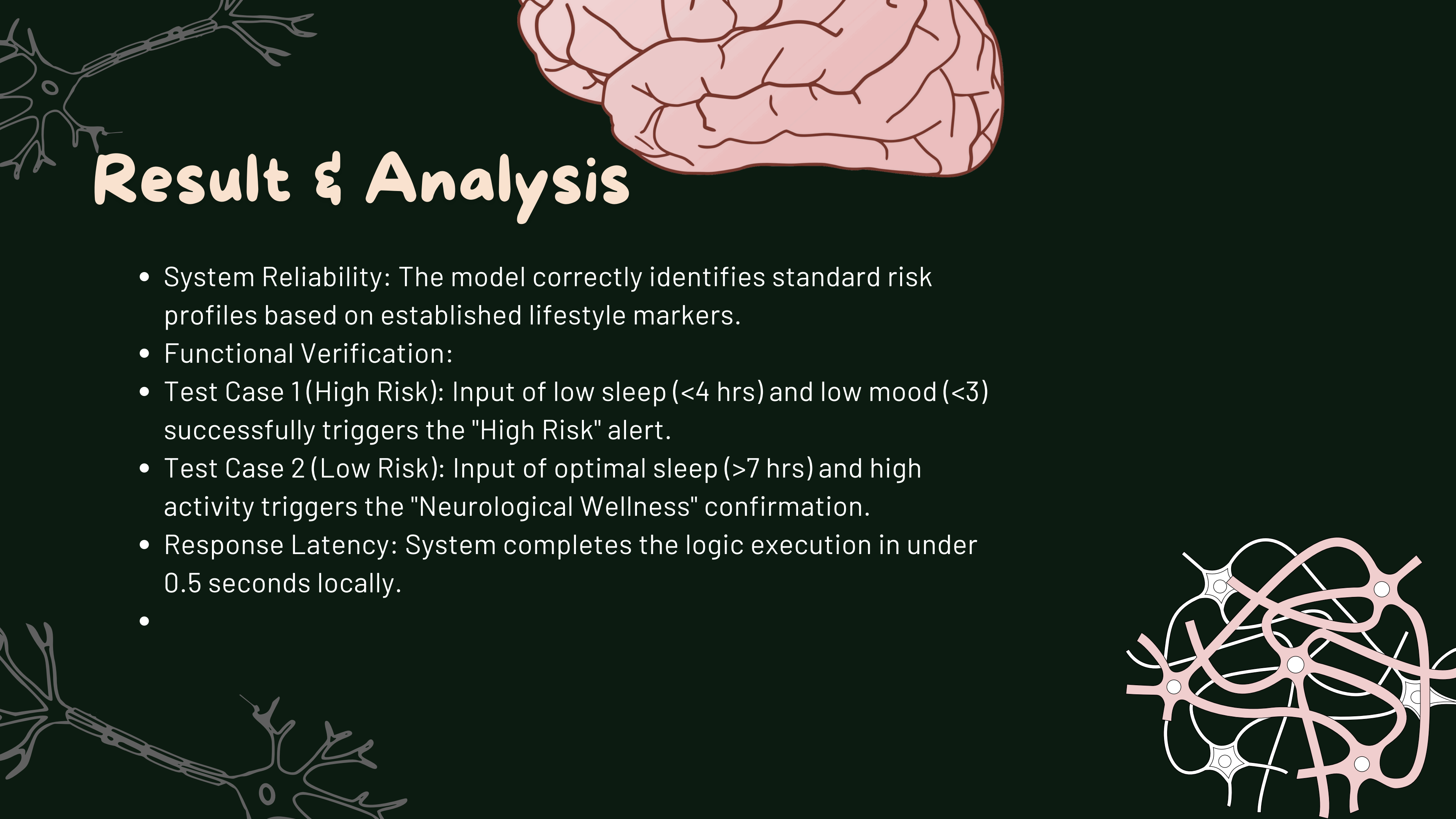


Implementation



Prototype

The screenshot shows a web browser window with the URL 127.0.0.1:5000. The page title is "Cortexa AI Predictor". Below the title, there is a prompt: "Enter your lifestyle metrics for a preliminary neurological risk assessment." The form contains four input fields: "1. Mood Rating (Past Week, 1-10):" with the value 8, "2. Sleep Regularity (Hours/Night):" with the value 8, "3. Physical Activity (Days/Week):" with the value 4, and "4. Diet Quality (Select One):" with a dropdown menu showing "Mostly Healthy/Balanced" selected. A "Get Risk Prediction" button is located below the form. The browser's address bar and navigation buttons are visible at the top.

The slide features a dark background with stylized illustrations of a brain and neurons. A pink brain is positioned at the top center, with its left side partially obscured by a grey neuron. In the bottom right corner, there is a cluster of pink neurons. The title 'Result & Analysis' is written in a large, bold, orange font on the left side of the slide.

Result & Analysis

- System Reliability: The model correctly identifies standard risk profiles based on established lifestyle markers.
- Functional Verification:
- Test Case 1 (High Risk): Input of low sleep (<4 hrs) and low mood (<3) successfully triggers the "High Risk" alert.
- Test Case 2 (Low Risk): Input of optimal sleep (>7 hrs) and high activity triggers the "Neurological Wellness" confirmation.
- Response Latency: System completes the logic execution in under 0.5 seconds locally.

The slide features four stylized neuron illustrations in the corners: top-left (pink), top-center (grey), top-right (pink), bottom-left (pink), bottom-center (grey), and bottom-right (pink).

Conclusion & Future Scope

Conclusion:

- Successfully integrated a machine learning model into a user-facing web dashboard.
- Created a working prototype for non-clinical neurological risk screening.
- Maintained a lightweight and high-performance local execution environment.

Future Scope (Roadmap):

Advanced AI: Integration of Recurrent Neural Networks (RNNs) to analyze temporal patterns (trends over weeks).

- Interoperability: Implementation of FHIR/HL7 standards to allow data sharing with hospital management systems.
- IoT Integration: Real-time data sync with smartwatches for automatic sleep and activity logging.