# NeuroDesk – Feature & Tech-Stack Deep Dive

## 1. Brain Dump to Task Cards (AI-Powered)

Purpose: Convert scattered thoughts into structured, categorized task cards.

Frontend:

• Flutter modal for text/voice input

• speech\_to\_text for transcription

Backend:

• FastAPI endpoint `/brain-dump`

• NLP stack: spaCy / transformers / OpenAI

• Categorization logic (energy, avoidance, emotion)

Data Flow: see diagram below.



## 2. Visual Task Deck (Energy-Based UI)

Purpose: Organize tasks by required energy rather than strict deadlines.

Frontend:

• Flutter Kanban/grid with Draggable + DragTarget

• Riverpod or Bloc for state management

Storage:

• Hive/SQLite: task model with `energy`, `status`, timestamps

## 3. Emotion & Overwhelm Detection (AI)

Purpose: Detect emotional strain and suggest Reset Mode.

Frontend:

• Triggers check after each brain dump

Backend:

• FastAPI endpoint `/detect-emotion`

• Model: cardiffnlp/twitter-roberta-base-emotion (transformers)

• Rule fallback for offline

Data Flow: see diagram below.



## 4. Burnout Prevention System

Purpose: Prevent over-focus by monitoring task streaks and focus duration.

Frontend:

• Timer logic + Riverpod/Bloc

Settings:

• Customizable thresholds (default 90 min or 3 tasks)

Storage:

• Hive/SQLite sessionHistory array

## 5. Reset Mode

Purpose: Provide a calming full-screen overlay when overwhelm is flagged.

Frontend:

• Flutter fullscreen modal with breathing animation

• Optional 3–5 min cooldown timer

## 6. TimePie (Optional Timer Layer)

Purpose: Visually track time on tasks.

Frontend:

• CustomPainter (pie/bar) + Timer

• Vibration feedback

Storage:

• Hive per-task focusMinutes

## 7. Daily Summary / Reflection (AI-Powered)

Purpose: Deliver end-of-day insight and positive reinforcement.

Frontend:

• Scheduled call or manual button

Backend:

• FastAPI `/generate-summary`

• Template or GPT-driven summary

Data Flow: see diagram below.



## 8. Notifications

Purpose: Gentle reminders for breaks, reflections.

Tech:

• flutter\_local\_notifications

• Triggered by timers or event count

## 9. Local & Cloud Storage

Local:

• Hive boxes or SQLite tables for offline-first data

Cloud (future):

• Firebase Firestore or Supabase for sync/backup