



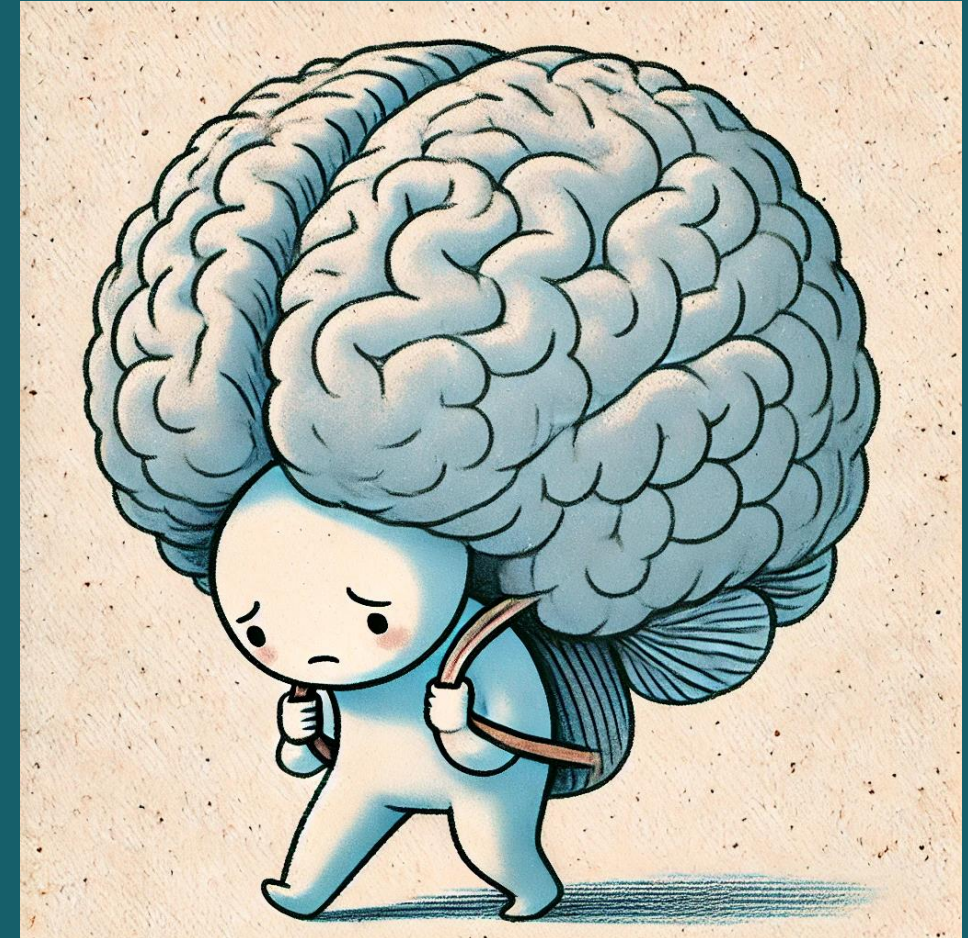
ALPHA BRAIN

technologies

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The Burden of Neurological Disorders

- **Prevalence:** Over 1 billion people worldwide & increasing due to aging populations.
- **Economic Impact:** Global costs > \$1 trillion annually (including direct medical costs and lost productivity)
- **Disability and Mortality:** A leading cause of disability & second leading cause of death globally



Prediction, AI & Neurological Disorders

Most costs of neurological disorders:

Acute events during chronic neurological disorders: Sporadic anomalies in brain activities (acute phases) happen during the general chronic course of neurological disorders:

- ❑ MS/Migraine attacks, secondary strokes and epileptic seizures:
- ❑ Unpredictable to patients (>90%) BUT predictable using AI & continuous monitoring of the brain dynamics (such as EEG)
 - + Predictions can prevent accidents and losses due to such acute phases
 - + Predictions can make more efficient treatment/management mechanisms



Complexity of the brain data & the AI on it

- ☐ Extremely noisy
- ☐ High throughput
- ☐ Real time
- ☐ Require explainability for medical usage
- ☐ Require personalization
- ☐ Require ultra-low-power computation

→ Need for embedded-AI

First Use Case: Unpredictability of seizures

Epilepsy is a severe, chronic, and unpredictable neurological disease characterized by an abnormal spread of electrical activity in the brain that causes seizures. Seizures can occur at any time, and without a warning.



Accidents



Deaths



Fear & anxiety



Exclusion from normal activities (e.g., cycling, driving, certain jobs)

Disability,
Premature death &
lower quality of life



70 million
patients

30 - 40% Drug resistant
(DRE)

NEVOA: Non-invasive solutions for epilepsy

Non-invasive Prediction:
10-45min in advance

Prediction device



NEVOA-1:
Patient alarm before seizure

HW + AI

23M patients globally → 1.1M (US)
\$16B cost (US)

Drug resistant (DRE*)
\$15k per patient annually (US)



NEVOA-2:
Patient Alarm with drug recommendation

HW + AI
+MEDICATION

46M Patients → 2.6M (US)
\$39B costs (US)

23M (DRE) + 70% of 46M
(unhappy drug respondents)
\$15k per patient annually

Non-invasive intervention:
Ultra-sound on the vagus nerve

Closed-loop system



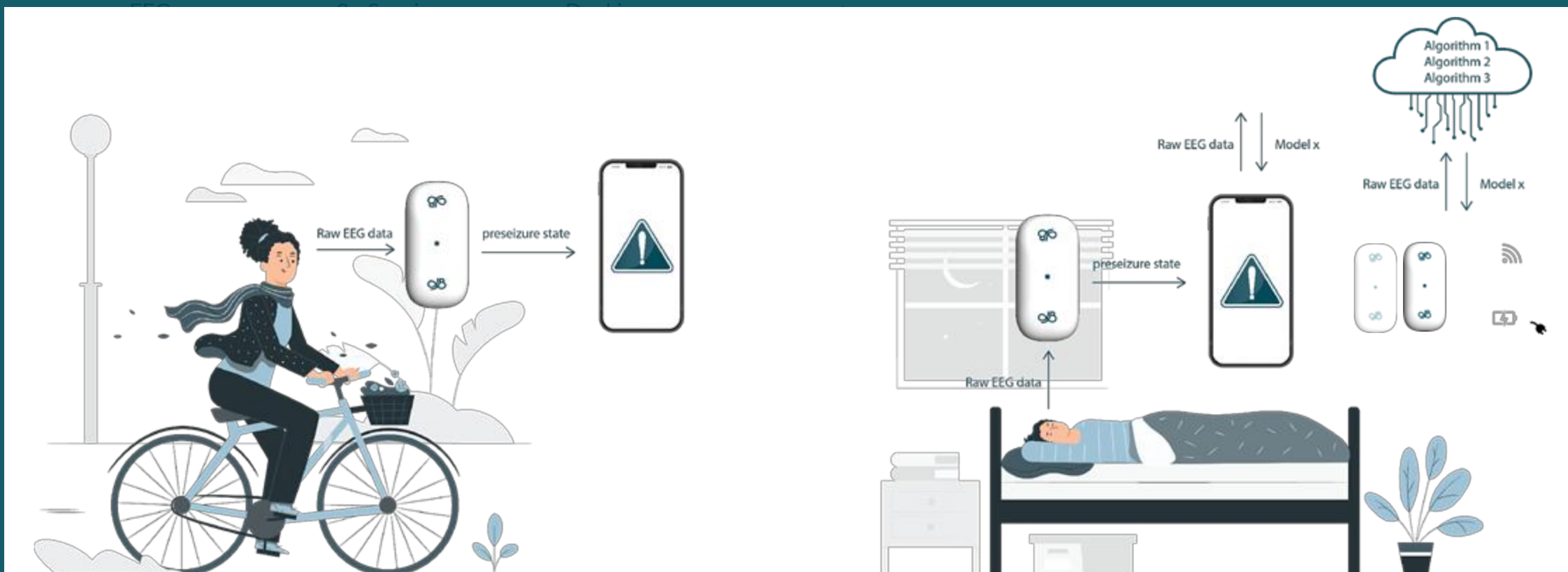
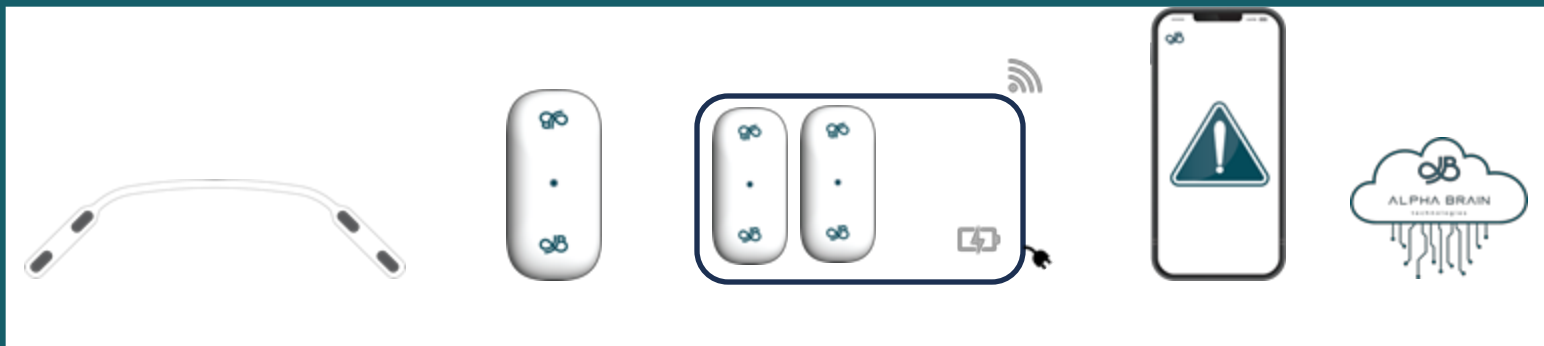
NEVOA-3:
Closed-loop intervention upon prediction

HW + AI
+NEUROSTIMULATION

46M Patients → 2.6M (US)
\$39B costs (US)

23M (DRE) + 70% of 46M
(unhappy drug respondents)
\$15k per patient annually

Nevoa-1 HW: EEG & motion



NEVOA-AI: Seizure Prediction

- Embedded-AI on an ultra-low-power wearable chipset
- Real-time predictions
- Highly accurate artifact removal (>95%)
- Fully personalized AI
 - Smart learning with few samples
 - Robust to the artifact
 - Fully explainable
- Proof-of-concept data: 10 min in advance accurate (sensitivity > 0.91; specificity>0.95)



Nevoa Business model (prior to reimbursement)

One time fee: €359



Recurring monthly fee: €37



Initial target market (prediction only)

TAM
€5.3B

SAM
€1.9B

SOM
€482M

- TAN: 6M EU + 3.4M US patients
- SAM: Drug resistant epilepsy: 35%
- SOM: At least one seizure a week: 26%
- Device pricing point of €1,690 (3 year lifespan)

NEVOA-AI beyond seizure prediction

AI embedded on wearable-EEG use case expansion:

Anomaly prediction on brain waves in other neurological disorders

- Migraine
- Multiple sclerosis
- Recurrent strokes
- Sleep monitoring
- BCI Mind reading