AI Detecting Infant Seizures (AIDIS)

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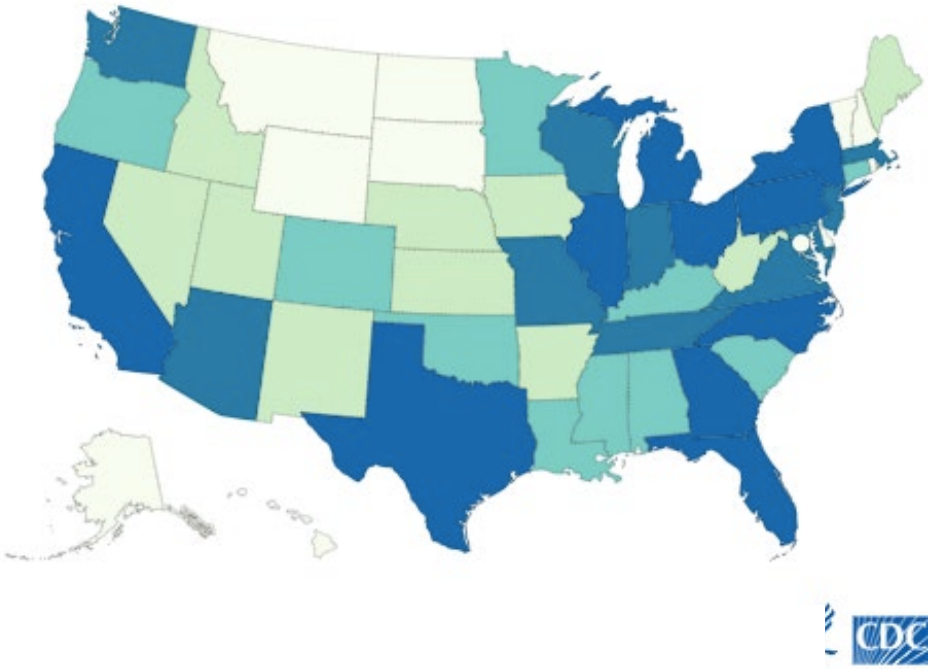
Background

- It is a neurological disorder characterized by abnormal, sudden, and excessive electrical discharges in the brain.
- According to CDC, 1.2% of the US population have active epilepsy (3 million adults and 470,000 children).
- Pediatric epilepsy typically manifests in childhood, and seizures may occur at any age during childhood, from infancy to adolescence.



CAUSES OF SEIZURES (BY AGE)

NEONATES
<1 MONTH

- **CNS infection**
- **Developmental disorders**
- **Drug withdrawal**
- **Genetic disorders**
- **Intracranial hemorrhage and trauma**
- **Metabolic disturbances** *(hypoglycemia, hypocalcemia, hypomagnesemia, pyridoxine deficiency)*
- **Perinatal hypoxia and ischemia**

INFANTS AND CHILDREN
>1 MONTH AND <12 YEAR

- **CNS infection**
- **Developmental disorders**
- **Febrile seizures**
- **Genetic disorders** *(metabolic, degenerative, primary epilepsy syndromes*
- **Trauma**

ADOLESCENTS
12–18 YEARS

- **Brain tumor**
- **Genetic disorders**
- **Illicit drug use**
- **Infection**
- **Trauma**

YOUNG ADULTS
18-35 YEARS

- **Alcohol withdrawal**
- **Autoantibodies**
- **Brain tumor**
- **Illicit drug use**
- **Trauma**

OLDER ADULTS
>35 YEARS

- **Alcohol withdrawal**
- **Alzheimer's disease and other degenerative CNS diseases**
- **Autoantibodies**
- **Brain tumor**
- **Cerebrovascular disease**
- **Metabolic disorders** *(uremia, hepatic failure, electrolyte abnormalities, hypoglycemia, hyperglycemia)*

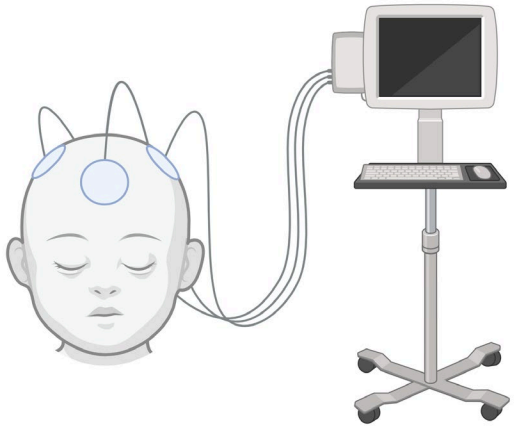
Source: Lowenstein, Daniel H. Harrison's Principles of Internal Medicine, 20e, Chapter 418: Seizures and Epilepsy. McGraw Hill; 2021.

Current Diagnostic tools:

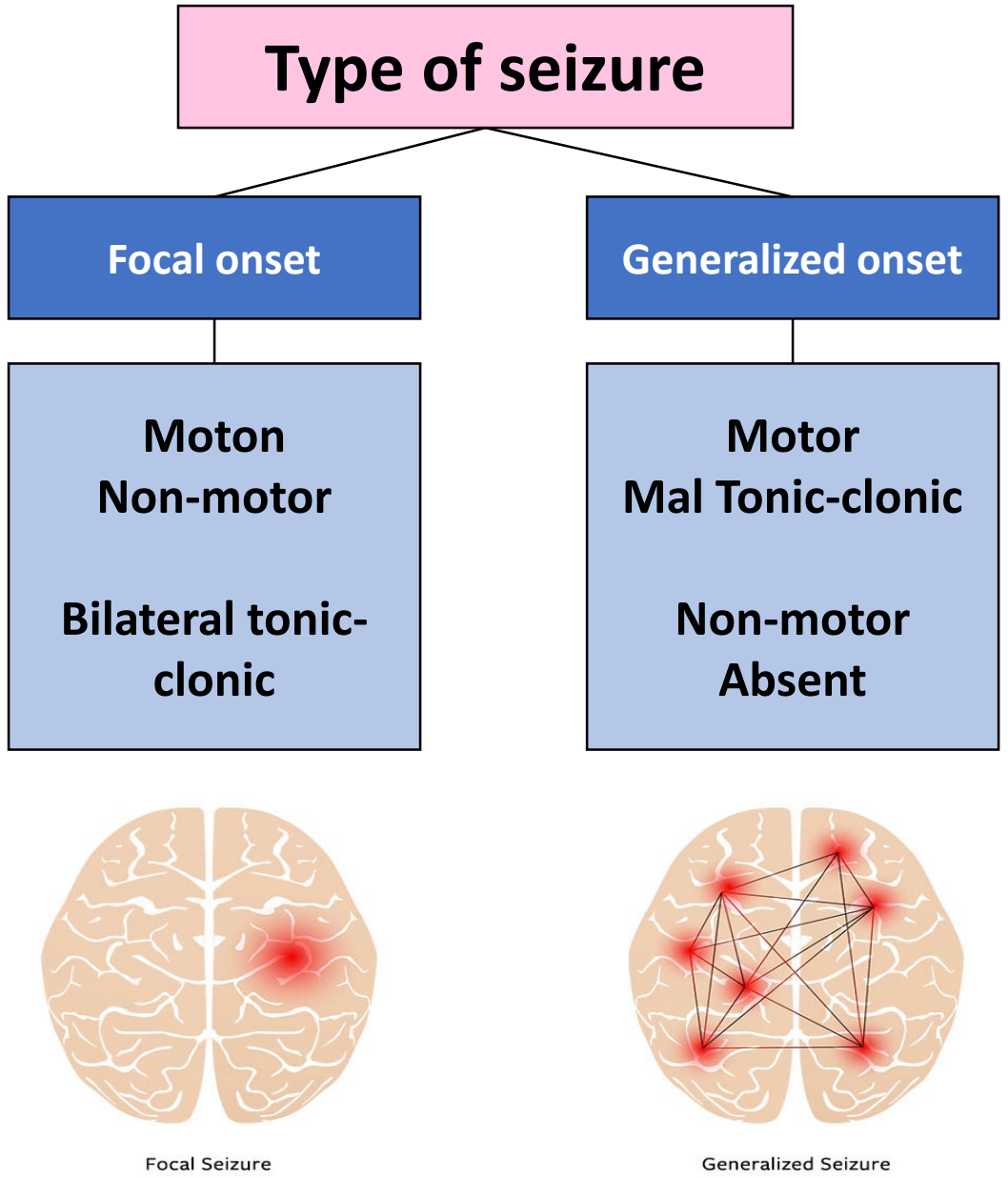
electroencephalogram EEG

MRI

CT scan



NO Available non-invasive tool



Motor/Jerk movement (hallmark symptom)

Bilateral movement

Creating active diagnostic tool

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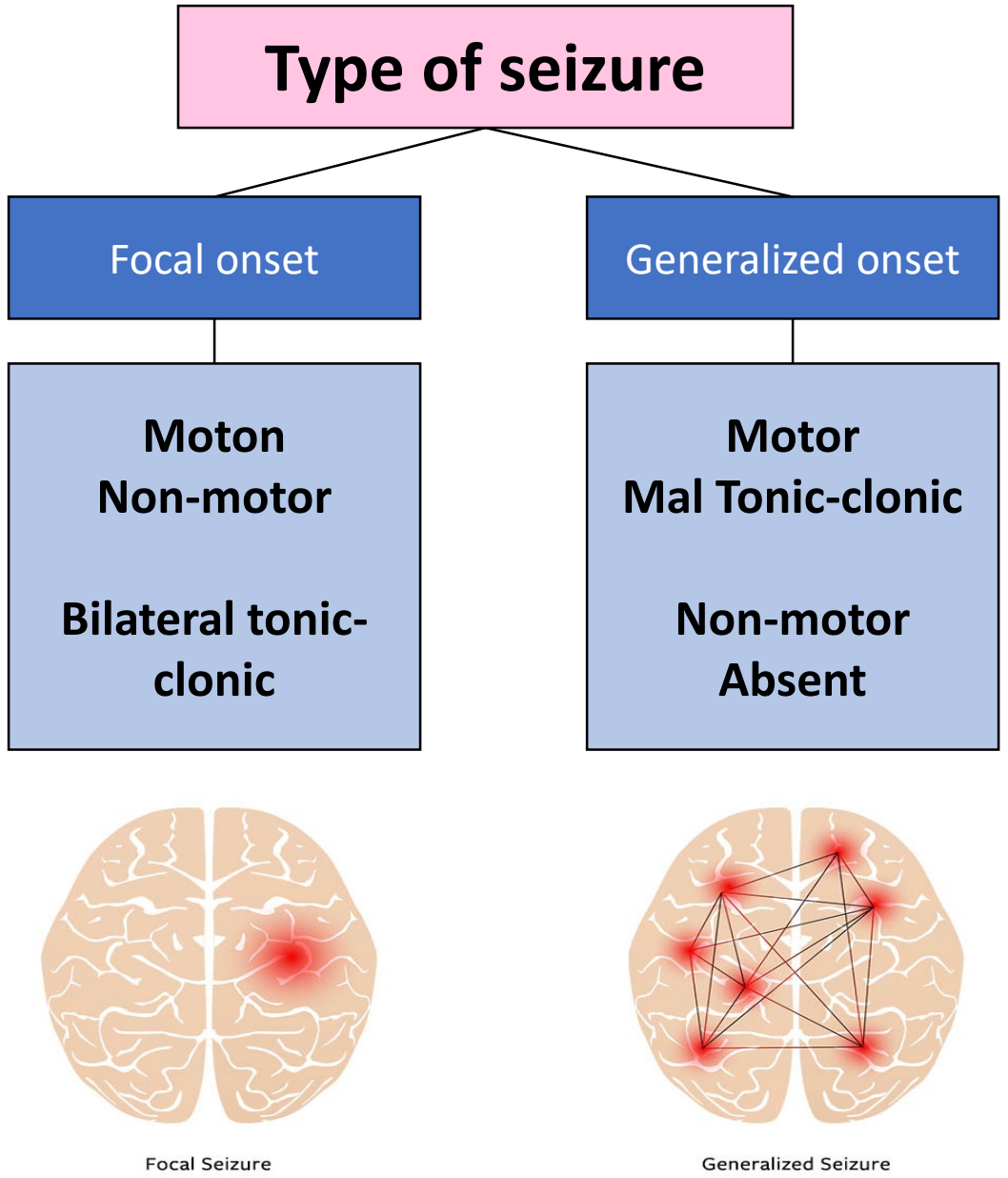


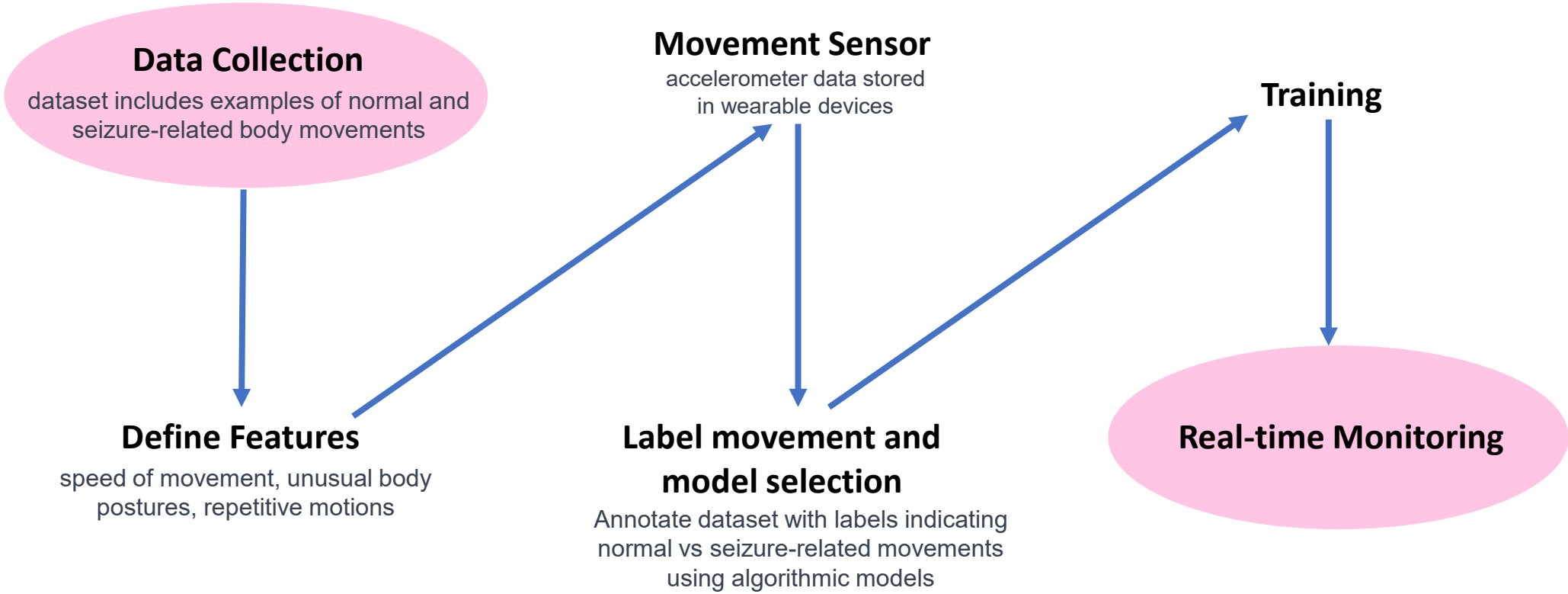
AIDIS

- Wearable device designed to assist in detecting jerking movements associated with epileptic episodes in pediatric patients, utilizing AI-generated movement sensor data

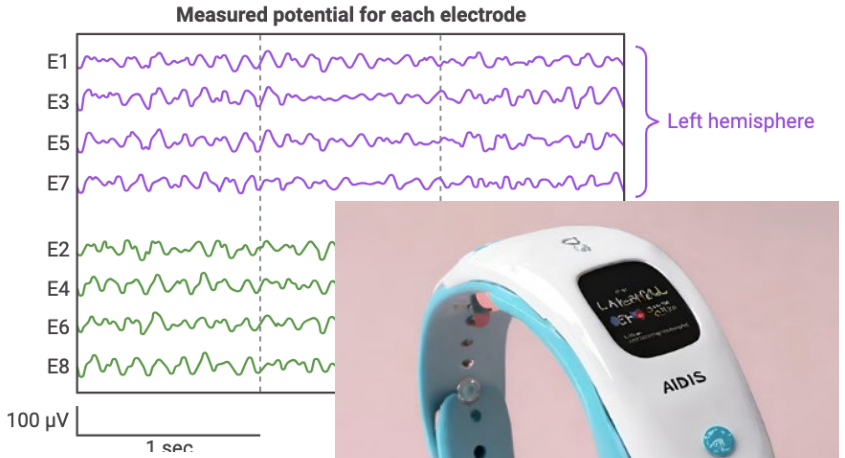
AIDIS design

- Data storage: in SDS card (within the device) plus the application tracker
- Target age: 0-2 (age that are not able to able to express their feeling)
- Power source: charge
- Weight: 10-12 g (∽0.02 lb.)

AIDIS generation



AIDIS



Measure abnormal
jerk movement
using AI sensor

Thank you

Questions !