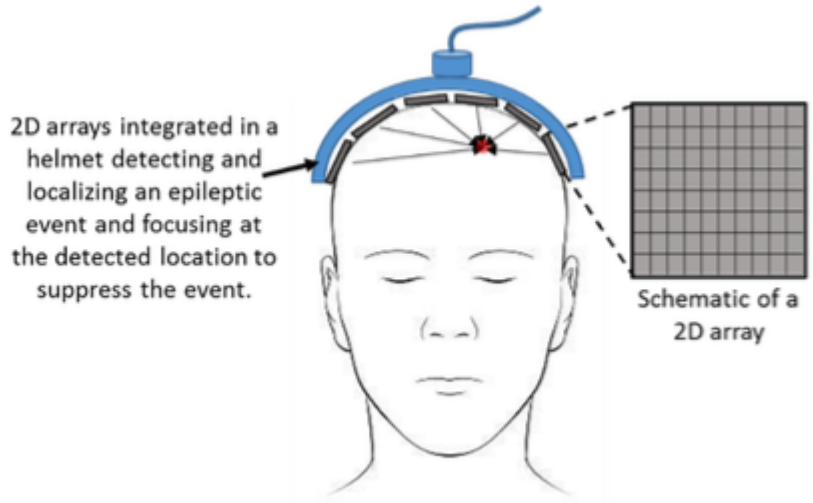
Docket #: S18-336

Ultrasound for Detecting and Suppressing Epileptic Seizure

Engineers at the Khuri-Yakub Group have designed a non-surgical alternative for treating epilepsy using ultrasonic technology which can detect, localize, and suppress epileptic seizures in epileptic patients. This technology is based on an array of ultrasound transducers placed in a helmet over the head of the patient that are instrumented to detect epileptic events. Once the event is detected and located, ultrasound energy will suppress the action firing and blunt the seizure. This approach can be extended to include the detection and suppression of other brain states and emotion such as anger.

Figure



Stage of Research

- Proof-of-concept
- Conducted 3D simulation with hemispherical skull

Applications

- Detecting and suppressing epileptic seizures
- Future applications can include detecting and suppressing or replacing other brain states and emotions such as anger

Advantages

- **Non-invasive** – to date, no non-invasive treatment exists
- **Improvement compared to current methods:**
- For detection, better spatial resolution vs. EEG
- For detection, better temporal resolution vs. fMRI/CT scans
- Less expensive
- More compact and portable

- **Customizable** – algorithms can be tailored to unique shape and outline of skull

Patents

- Published Application: WO2020069084
- Published Application: 20210260411
- Published Application: 20220152428
- Issued: 11,260,248 (USA)
- Issued: 11,857,811 (USA)

Innovators

- Quintin Stedman
- Kamyar Firouzi
- Butrus Khuri-Yakub

Licensing Contact

Luis Mejia

Senior Licensing Manager, Physical Sciences

Email