Researchers at the University of South Florida have created software to model patient’s brain networks for use in predicting how patients will respond to neurosurgery.

About 2.2 million Americans are diagnosed with epilepsy, and as many as 1.3 million of those cases do not respond to medical treatment. When epilepsy patients do not respond to medical treatment, resective neurosurgery is the next standard of care. However, this surgical management does not eliminate seizures for one-third of patients. Evidence shows that network level disturbances may explain why some patients do not respond to surgery, but no tool exists that automatically maps each patient’s brain network. There is a need for a method to better predict whether epilepsy patients will respond to surgery or not.

USF inventors created a method that automatically processes EEG and MRI data to create a patient-specific 3D image that could be used to more precisely identify surgical candidates. The 3D image could also help to create a targeted surgical plan for those patients. This automatic mapping shows the patient’s unique brain network and is the first available of this kind. This software could drastically increase the success of resective neurosurgery for epilepsy patients.

**ADVANTAGES:**

- More precisely identify surgery candidates
- More detail helps create targeted surgical plan
- Automatically maps patients’ brain network

**Software to Map Patient’s Brain Network**

*Predicts Success of Surgery for Intractable Epilepsy*

**Fiber Map of the Epilepsy Network**

*Showing the Anatomical Connections that may Represent Surgical Targets*

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