



## PRODUCT

Automated neuronavigational system to place external ventricular drains safely and precisely at the bedside.

## INDICATION

Neurosurgery, External Ventricular Drain (EVD), Neuronavigation

## VALUE PROPOSITION

- Neuronavigation support outside the OR for ventriculostomy catheter placement.
- Lower risk of complications (as compared to freehand)
- Eliminates need for an additional neuroimaging before neuronavigation.
- Obviates the need to have an external energy source.

## DEVELOPMENT STAGE

Prototype Developed

## INTELLECTUAL PROPERTY

Patent Pending

## PARTNERING OPPORTUNITY

Development and commercialization partnership

## CONTACT INFORMATION

Partha Paul, PhD, MBA  
Director, Business Development & Licensing  
Paulp2@ccf.org  
216-672-1664

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# Auto-Registration for Stereotactic Procedures

*Rafi Avitsian, MD, Pablo Recinos, Sean Nagel, MD, Efstathios Kondylis, MD, Stephen Jones, MD, PhD*

## UNMET NEED

External Ventricular Drain (EVD) placement in patients almost always occurs emergently and is performed at the bedside in the emergency room or intensive care unit setting and it is rarely performed in the operating room (OR). EVD placement is performed using mainly 1) Anatomic landmarks- "Blind", or 2) Neuronavigation- Fiducial registration or surface merging. Neuronavigation systems for the placement of EVD are bulky and cannot be used outside the operating room because they are expensive and time-consuming. Freehand typically involves multiple attempts and has ~25% misplacement rate, which can result in significant and potentially catastrophic complications such as intracranial hemorrhage. There is a need for a navigation system outside of the OR to place EVD and reduce the risk of complications.

## SOLUTION

An Automated Surface Registration System that utilizes an array of bend sensors to trace the contour of the forehead/face anatomy along with a "searching function" algorithm would help to identify optimal fit. Two systems have been developed for co-registering the contour with the anatomy displayed in imaging: 1) Patch-based- flexible, adhesive patch for contour tracing and 2) Spider-based - "Spider" device for point-cloud sensing. A patch prototype has been developed. The patch is embedded with two bend sensors and conforms to the contour of the surface's anatomy without causing distortion. It can be placed with an adhesive backing to affix to the desired location. Each individual sensor within the array is arranged on the patch so that the position of each sensor is fixed and known relative to that of the other sensors.

