

Ground Breaking Deep Learning Technology for Monitoring the Brain during Surgery with Commercialization Opportunity

We are developing a clinical tool based on deep learning to automatically detect stroke during surgery and alert the surgical team to avert complications and save lives. We are uniquely positioned at the intersection of the largest health care system in the US, the University of Pittsburgh Medical Center (UPMC), and top ranked academic institutions, the University of Pittsburgh (Pitt) and the Carnegie Mellon University (CMU).

Our group consists of Pitt and UPMC faculty members who have complementary expertise in machine learning and in healthcare and specifically in deep learning, clinical informatics, neurology, and surgery. We develop novel deep learning and other machine learning methods for application to challenging clinical problems. We are very well funded by NIH, NSF, industry, and internal institutional grants.

In the current project, we are developing a clinical tool that will automatically detect stroke and other adverse events during surgery from an array of monitoring information, and provide highly accurate real time alerts to the surgical team to make course corrections during surgery. The clinical tool is to be deployed in operating rooms for monitoring surgeries and providing high quality alerts.

The successful candidate will work with us in a highly collaborative environment that spans the computer laboratory and the operating room and will gain unique and valuable experience in deep learning, development of a tool for a clinical setting, and in commercialization.

Expected qualifications

Genuinely motivated to develop and apply machine learning to clinical problems. Strong expertise in machine learning is required; expertise in statistics and experience with messy clinical data is a plus. Python fluency is required. Demonstrated ability to make meaningful contributions to projects with a research flavor is valuable.

Experience/Abilities

- Hands-on experience building predictive models
- Experience working with diverse data types including signal and structured data; experience with text data is a plus
- Experience in programming in Python; experience in additional languages (R, C/C++) is a plus
- Aware of current best practices in machine learning
- Fluency in one of the deep learning frameworks is a plus (PyTorch or Tensorflow)
- Knowledge of statistics, including hypothesis testing with parametric and non-parametric tests and basic probability
- PhD in computer science, electrical engineering, statistics or equivalent computational / quantitative fields (exceptional MS candidates will be considered)

The goal of this project is to develop, evaluate and commercialize a tool for automatic detection of stroke during surgery. The successful candidate will have the rare opportunity to perform cutting-edge deep learning research and participate in a commercial endeavor.

If interested, contact Shyam Visweswaran, MD, PhD at shv3@pitt.edu and Kayhan Batmanghelich, PhD at kayhan@pitt.edu. For details of ongoing research work, visit <http://www.thevislab.com/> and <https://kayhan.dbmi.pitt.edu/>.

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