

Case Study

Cancer Detection with Sensor Data



The Business Challenge

In the United States, it is estimated that in a single year more than 180,000 women will be diagnosed with breast cancer and roughly 40,000 women will die. Our client and partner, First Warning Systems (FWS), has developed a non-invasive and non-radiogenic system for the early detection of tissue abnormalities. The system has proven highly effective for use with young women and eliminates barriers to access for low-income women and for women with a family history of breast cancer who require more frequent testing. It costs much less than current screening methods requiring mammogram or MRI equipment. The system uses data collected from deep tissue thermal sensors arrayed across both breasts and has a strong track record in three clinical trials. FWS requires an analytic technology to develop accurate detection models from complex sensor data, and to deploy automated screening scores to millions of customers on an ongoing basis.



Our Solution

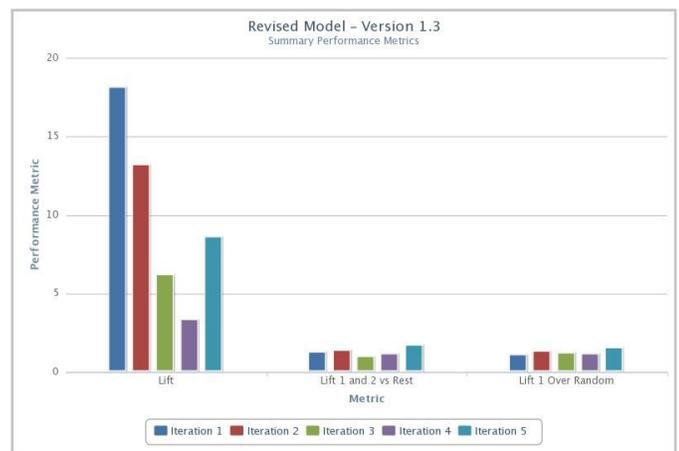
Background First Warning Systems has previously invested in analytics systems to support their modeling and big data needs. However, their original system was built using a package that was neither flexible nor scalable to meet the growing needs for visualization and big data management. Prior engagements with specialized teams were not able to consistently resolve the important issues of modeling accuracy, scalability of technology, and handling of big data from streaming sensor technologies.

Feedback

“Lityx was selected because of their reputation for scalable business solutions. The LityxIQ platform will continue to support our needs as we introduce new applications that will increase our need for big data.”
Dave Wertzberger, Marketing and Risk Management Director, First Warning Systems.

Scalable Modeling Our first objective with FWS was to replicate data and modeling algorithm comparisons that had been performed previously in multiple other platforms. These earlier projects had taken years to develop and complete. We imported a number of data sources into the LityxIQ platform and created over 500 additional features for each sensor record. We then created an automatic algorithm bake-off using standard algorithms in the PredictIQ solution. Over 40 different algorithms and settings combinations were setup and compared using PredictIQ’s intuitive point-and-click interface. The bake-off was setup, executed, and completed in a matter of hours, compared to many months in prior, manual efforts. Performance results were improved over what had been found previously, in only a small fraction of the time and effort.

Deployment We are currently engaging with FWS to deploy scoring of real-time sensor data as it is generated by millions of customers of their products. Sensors will generate massive amounts of data that will stream into LityxIQ, be processed and scored, and return screening results back to the end-user.



Results

- 40+ algorithms and technical settings compared in bake-off with no programming
- Modeling completed in small fraction of the time compared to previous attempts
- Ability to automatically deploy models to incoming sensor big data streams