

Natural Language Processing Accurately Tracks Clinical Quality



Hospital systems interested in mining text documents for medical knowledge that can improve the quality of care should consider using natural language processing (NLP). The text analysis technique allows computers to derive meaning from medical records, which can then be interpreted by clinicians and quality control experts. That makes it possible to track care quality at the levels of individual providers, service lines and healthcare systems.

"There is a vast quantity of medical knowledge in text documents. Employing natural language processing, a linguistic technique using sophisticated software to extract meaning from spoken or written language, allows the computer to 'understand' medical records in ways that were not possible previously," said Dr. Timothy Imler, a gastroenterologist and informatician. Dr. Imler is an investigator at the Regenstrief Institute's Center for Biomedical Informatics and an assistant professor of medicine in the Division of Gastroenterology and Hepatology at Indiana University School of Medicine.

On 14 April, Dr. Imler will speak at the 2015 Healthcare Information and Management Systems Society's (HIMSS) Conference and Exhibition. His presentation, "Quality Monitoring Utilising Natural Language Processing", will explore the ways in which NLP can improve care. The event attracts thousands of leaders in the health information technology, healthcare, government, industry and public health sectors.

One example of the role of NLP in healthcare quality control comes from gastroenterology. Dr. Imler recently published a study on the impact of NLP on colonoscopy, which involved multiple centres. The report includes completeness and quality of reporting, and recommendations for the surveillance level.

"Text documents have historically been black boxes to researchers and quality experts, because they had to be laboriously evaluated by hand, one at a time," said Dr. Imler. "With natural language processing we can utilise mountains of data we already have to improve care and, as appropriate, provide information to those who need it including physicians, payers and accountable care organisations.

"We want access to the treasure trove of information contained in narratives and we have already accomplished that in Indiana through the Indiana Network for Patient Care, developed by the Regenstrief Institute and now supported by the Indiana Health Information Exchange," he continued. The Indiana Network for Patient Care has more than 90 million documents that contain narratives on 3.3 million patients.

Most hospitals do not yet use NLP, Dr. Imler says, but since there is a negligible cost difference in processing one text field and a million, the deficiency can be corrected with a focus on expertise over additional expenses.

Source: [Indiana University](#)

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