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TECHNOLOGY CASE STUDY

Duplicate Records – Be Gone

Netrics Software Improves Patient Safety

BY HERMAN TULL

With today's advances in IT systems, hospital patients expect healthcare professionals—from doctors and nurses to the registration and billing staff—to have quick, accurate access to their records. Yet, as any medical records administrator can tell you, hospital databases are filled with erroneous duplicates—partial records created as a result of inaccurate data entry. On the administrative side, duplication wreaks havoc with registration and billing systems. Even more worrisome, however, is the potential effect duplication can have on patient care; when medical records are spread out over two or more records, healthcare providers can miss critical elements of a patient's history simply because it is located on the "other record."

Netrics, a software technology company located in Princeton, developed an innovative technology called "Intelligent Record Matching" that immediately identifies duplicate records and allows database users to seamlessly retrieve a single, integrated record. In partnership with Cerner Corporation, the leading supplier of healthcare data management systems, Netrics technology has become the industry leader for detection of duplicate patient records.

"The focus of our company is providing intelligent record matching," explained Stefanos Damianakis, CEO of Netrics. According to Damianakis, today's database software cannot call up a record unless the user's input precisely matches the information in the database. "Database software is just not human tolerant. If an operator makes an input error, he or she is going to get a 'no match' response."

And, this is where problems start to arise. When an operator is unable to find the original record, he or she will create a new record. "As you can imagine, these duplicate records have a spiraling effect on the entire database system," added Damianakis.

Netrics Intelligent Record Matching (IRM) technology is the first commercial solution that uses machine learning to identify duplicate records. At the heart of the technology are powerful algorithms that enable the software to "learn"—just as a human does—with experience. Unlike traditional record matching approaches, Netrics IRM can process

arbitrary fields and is not limited to the specific data fields of name, address, date of birth, and social security number. By leveraging the information in additional fields, Netrics IRM technology allows for the highest possible accuracy rate in record matching. Additionally, Netrics IRM does not require the setting of complicated weights by an operator; the algorithms automatically learn the

optimal values of any needed weights—without operator involvement.

Although this technology can be applied widely, Damianakis is especially passionate about its use in patient record matching. "When it comes to healthcare, the issue of duplicate records is not simply an annoyance; it really becomes a question of patient safety. A duplicate record means that there is either a data entry error or an incomplete record in the system, and this can have a potentially harmful effect on patient care. In solving this problem with Netrics technology, we are not only improving healthcare systems but perhaps even saving lives."

Netrics' partnership with the Cerner Corporation, the industry leader in healthcare data management, is a key factor in bringing this new technology to market. According to Lary Ippolito, managing director for Cerner's Access Management Enterprise, there are two elements to this relationship. First, Cerner sends an existing dataset to Netrics facilities where Netrics engineers prepare analysis reports of potential duplicate records. Once the duplicate records are identified, Cerner can deploy the clean data in its Enterprise Master Person Index, which provides hospital database users—from surgeons to pharmacists to registration managers—with an accurate and comprehensive patient record. Once in place, the Cerner system continues to employ Netrics algorithms to maintain a duplicate-free database environment. According to Ippolito, Netrics technology is distinguished by its ability to approximate human behavior, factoring in choices just as people do when making decisions.

"Our clients really see the difference. They are very attracted to the machine learning aspect of

"A key element of our partnership with Cerner Corporation is providing hospitals and healthcare systems with the technology to maintain a patient's longitudinal record exactly as it has been built up over time. Hospitals that currently use the technology laud its accuracy and ease of use," said Damianakis.

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the technology. Integrated with our Cerner EMPI solution, Netrics technology increases accuracy across the house and clients see huge value in this.”

Just Associates, Inc., located in Denver, Colo., is a Netrics partner specializing in medical record technology services. According to Beth Just, president and CEO, “With other software tools, we might find 50 to 60 percent of the duplicate records in a database, and we would also get a large number of ‘false-positives’—records that really are not duplicates, but contain similar information.”

This simply does not happen with Netrics technology, said Just. “It’s not only more accurate than other technologies, but it finds very interesting types of matches—things that contain even the slightest errors.”

Just’s clients are clearly impressed with the efficiency of Netrics technology. “They like the results. In fact, in one case, a client immediately decided to do another analysis of a second database.” As far as Just is concerned, Netrics has been a model partner.

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“They have done some very creative stuff. Yet, unlike other developers I have worked with, the guys at Netrics have a very operational approach—they are really after solving business problems, and they will find the best way to do it.”

Beyond its application in identifying duplicate records, Netrics technology is also used to maintain databases in an ongoing duplicate-free environment. “A key element of our partnership with Cerner Corporation is providing hospitals and healthcare systems with the technology to maintain a patient’s longitudinal record exactly as it has been built up over time. Hospitals that currently use the technology laud its accuracy and ease of use,” said Damianakis.

Netrics machine learning technology shows great promise for other application areas within the healthcare management field. Looking to the future, Damianakis sees claims matching—a broad field that includes payor, provider, and insurance claims—as an area in which Netrics technology can be immediately applied.