Applying Cloud Computing in Healthcare Informatics
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Abstract
The Affordable Care Act (ACA) revolutionized the healthcare in United States by introducing triple aims. They are, improve access and quality of care, mitigate cost of health care, and population health. The chief accomplishment of ACA is coverage for millions of Americans with pre-existing conditions. This shift in healthcare spending is encouraging the industry to find innovative ways into preventive healthcare. One way to significantly reduce healthcare expenditures is by decreasing the patient readmission rates. This research will demonstrate how hospitals can use cloud computing to share patient information and avoid errors that could cause patient readmissions, and support preventive medicine.

Motivation and Goals
• Share information between approved parties such as hospitals, care providers, pharmaceutical industry, insurance, and other 3rd party software vendors, etc.
• Improve care management through effective and reliable diagnostic processes.
• Improve patient treatment and recovery process and thereby reducing the healthcare costs.
• Leverage higher education innovation capacity to build and expand the knowledge base.

Datasets, Methods and Techniques
1. Patient data collected from various sources.
   • Public (CMS, MEPS, THCIC, etc.)
   • Private datasets that are mostly hospital (or other care provider) patient specific health records.
2. High Performance Dynamic Big Data Analytics
3. Integrate psychotherapy notes using machine learning tools.
4. We will use a role design pattern and patient consent to control access to information.

Conclusion
• The Affordable Care Act created tremendous opportunity to reduce health care costs.
• Improved information sharing can reduce health care costs by reducing patient readmission rates.
• Cloud computing can help care providers and insurance industry share healthcare information seamlessly and help reducing patient readmissions
• OpenStack and High Performance Dynamic Big Data Analytics provide efficient means for using cloud computing for predictive analytics and for sharing the knowledgebase.

Discussion
Why Cloud Computing is significant in healthcare?
• Preventive care is the critical piece of the Affordable Care Act, and predictive analytics is the key.
• Seamless and secure access to complete patient and disease histories will provide wealth of knowledge for improving patient care and treatment processes.
• Both readmission and financial risks can be substantially mitigated through predictive analytics.
• Cloud computing can provide seamless and real time access more accurate information about their patients by assembling a complete patient history from all of the different facilities that have provided care for that patient.
• Cloud computing is cost-effective, easy to use and easily accessible from virtually any hospital in the US. This makes it the perfect platform for helping doctors and providers to share patient information with that patient's consent.
• Cloud computing can be easily and cheaply implemented by using the ready-made OpenStack to create an efficient, reliable and secure cloud network.
• Texas Tech is pioneering research in developing cloud standards and best practices, big data analytics for mitigating readmission and financial risks.

References

Acknowledgements
The authors acknowledge support from the NSF Cloud and Autonomic Computing Center, Department of Computer Science, and the Texas Tech High Performance Computing Center for this work.