COLLEGE OF ENGINEERING AND COMPUTER SCIENCE
FLORIDA ATLANTIC UNIVERSITY

Announces the Ph.D. Dissertation Defense of

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for the degree of Doctor of Philosophy (Ph.D.)

"HPCC based Platform for COPD Readmission Risk Analysis with implementation of Dimensionality reduction and balancing techniques"

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DEPARTMENT:
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ABSTRACT OF DISSERTATION
HPCC based Platform for COPD Readmission Risk Analysis with implementation of Dimensionality reduction and balancing techniques

Hospital readmission rates are considered to be an important indicator of quality of care because they may be a consequence of actions of commission or omission made during the initial hospitalization of the patient, or as a consequence of poorly managed transition of the patient back into the community. The negative impact on patient quality of life and huge burden on healthcare system have made reducing hospital readmissions a central goal of healthcare delivery and payment reform efforts. In this study, we will be proposing a framework on how the readmission analysis and other healthcare models could be deployed in real world and a Machine learning based solution which uses patients discharge summaries as a dataset to train and test the machine learning model created. Current systems does not take into consideration one of the very important aspect of solving readmission problem by taking Big data into consideration. This study also takes into consideration Big data aspect of solutions which can be deployed in the field for real world use. We have used HPCC compute platform which provides distributed parallel programming platform to create, run and manage large Big data applications. In this study, we have also proposed some feature engineering and data balancing techniques which have shown to greatly enhance the machine learning model performance. This was achieved by reducing the dimensionality in the data and fixing the imbalance in the dataset. The system presented in this study provides a real world machine learning based predictive modeling for reducing readmissions which could be templatized for other diseases.

BIOGRAPHICAL SKETCH
Born in India
B.S., College of Engineering Roorkee, Roorkee, Uttarakhand, India, 2010
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CONCERNING PERIOD OF PREPARATION
& QUALIFYING EXAMINATION

Time in Preparation: 2016 - 2020

Qualifying Examination Passed: Spring 2017

Published Papers:

1. P. Jain, A. Agarwal, R. Behara, and C. Baechle. "HPCC based framework for COPD readmission risk analysis". Journal of Big Data 2019 6:26.
2. P. Jain, A. Agarwal, R. Behara. "An Approach to Supervised Classification of Highly Imbalanced and High Dimensionality COPD Readmission Data on HPCC". The 13th Annual IEEE International Systems Conference, Orlando, FL.
3. P. Jain, A. Agarwal, R. Behara, and C. Baechle. "Developing HPCC based COPD Readmission Risk Analysis Platform". The 2018 International Conference on Computational Science and Computational Intelligence, Las Vegas, NV.
4. B. Jennifer, Jain P., Behara R. and Agarwal A. "Community Based Care Coordination: An Elder-Care Learning Community Platform" 2018 49th Annual Meeting of the Decision Sciences Institute, Chicago, IL, 2018
5. P. Jain, A. Agarwal and R. Behara, "Care Coordination: A Systematic Review and a New Perspective," 2017 IEEE 17th International Conference on Bioinformatics and Bioengineering (BIBE), Washington, DC, 2017, pp. 531-536.
6. R. Behara, F. Fatteh, P. Rajadesingh, P. Jain and A. Agarwal, "A prognostic COPD clinical support system," 2013 IEEE International Systems Conference (SysCon), Orlando, FL, 2013, pp. 56-59. doi: 10.1109/SysCon.2013.6549858