

# **Data Analytics for Health-Care Risk Predictions based on Ensemble Classifiers and Subjective Projection**

**Professor Hamido FUJITA**

**Director of Intelligent Software Systems**

**Iwate Prefectural University, Japan**

<http://www.fujita.soft.iwate-pu.ac.jp/>

**Editor-in-Chief: Knowledge-based system, Elsevier**

<http://www.journals.elsevier.com/knowledge-based-systems>

**Co-Editor-in-Chief: Applied Intelligence, Springer**

Discovering patterns from big data attracts a lot of attention due to its importance in discovering accurate patterns and features that are used in predictions of decision making in health care.

The challenges in big data analytics are the high dimensionality and complexity in data representation. Granular computing and feature selection are among the challenge to deal with big data analytics that is used for Decision making. We will discuss these challenges in this talk and provide new projection on ensemble learning for health care risk prediction. In decision making most approaches are taking into account objective criteria, however the subjective correlation among different ensembles provided as preference utility is necessary to be presented to provide confidence preference additive among it reducing ambiguity and produce better utility preferences measurement for good quality predictions. Most models in Decision support systems are assuming criteria as independent. Different type of data (time series, linguistic values, interval data, etc.) imposes some difficulties to data analytics due to preprocessing and normalization processes which are expensive and difficult when data sets are raw and imbalanced. We will highlight these issues though project applied to health-care for elderly, by merging heterogeneous metrics for providing health care predictions for elderly at home. We have utilized ensemble learning as multi-classification techniques on multi-data streams that collected from multi-

sensing devices.

Subjectivity (i.e., service personalization) would be examined based on correlations between different contextual structures that are reflecting the framework of personal context, for example in nearest neighbor based correlation analysis fashion. Some of the attributes incompleteness also may lead to affect the approximation accuracy. Attributes with preference-ordered domain relations properties become one aspect in ordering properties in rough approximations. We outline issues on Virtual Doctor Systems, and highlights its innovation in interactions with elderly patients, also discuss these challenges in granular computing and decision support systems research domains. In this talk I will present the current state of art and focus it on health care risk analysis with examples from our experiments.



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He is professor at Iwate Prefectural University (IPU), Iwate, Japan, as a director of Intelligent Software Systems. He is the Editor-in-Chief of Knowledge-Based Systems, Elsevier of impact factor (4.393) for 2017. He received Doctor Honoris Causa from O'buda University in 2013 and also from Timisoara Technical University in 2018, and a title of Honorary Professor from O'buda University, Budapest, Hungary in 2011. He received honorary scholar award from University of Technology Sydney, Australia on 2012. He is Adjunct professor to Stockholm University, Sweden, University of Technology Sydney, National Taiwan Ocean University and others. He has supervised PhD students jointly with University of Laval, Quebec, Canada; University of Technology, Sydney, Australia; Oregon State University (Corvallis), University of Paris 1 Pantheon-Sorbonne, France and University of Genoa, Italy. He has four international Patents in Software System and Several research projects with Japanese industry and partners. He is vice president of International Society of Applied Intelligence, and Co-Editor in Chief of Applied Intelligence Journal, (Springer). He has given many keynotes in many prestigious international conferences on intelligent system and subjective intelligence. He headed a number of projects including Intelligent HCI, a project related to Mental Cloning as an intelligent user interface between human user and computers and SCOPE project on Virtual Doctor Systems for medical applications.