CLOUD BASED PATIENT PRIORITIZATION AS SERVICE IN PUBLIC HEALTH CARE

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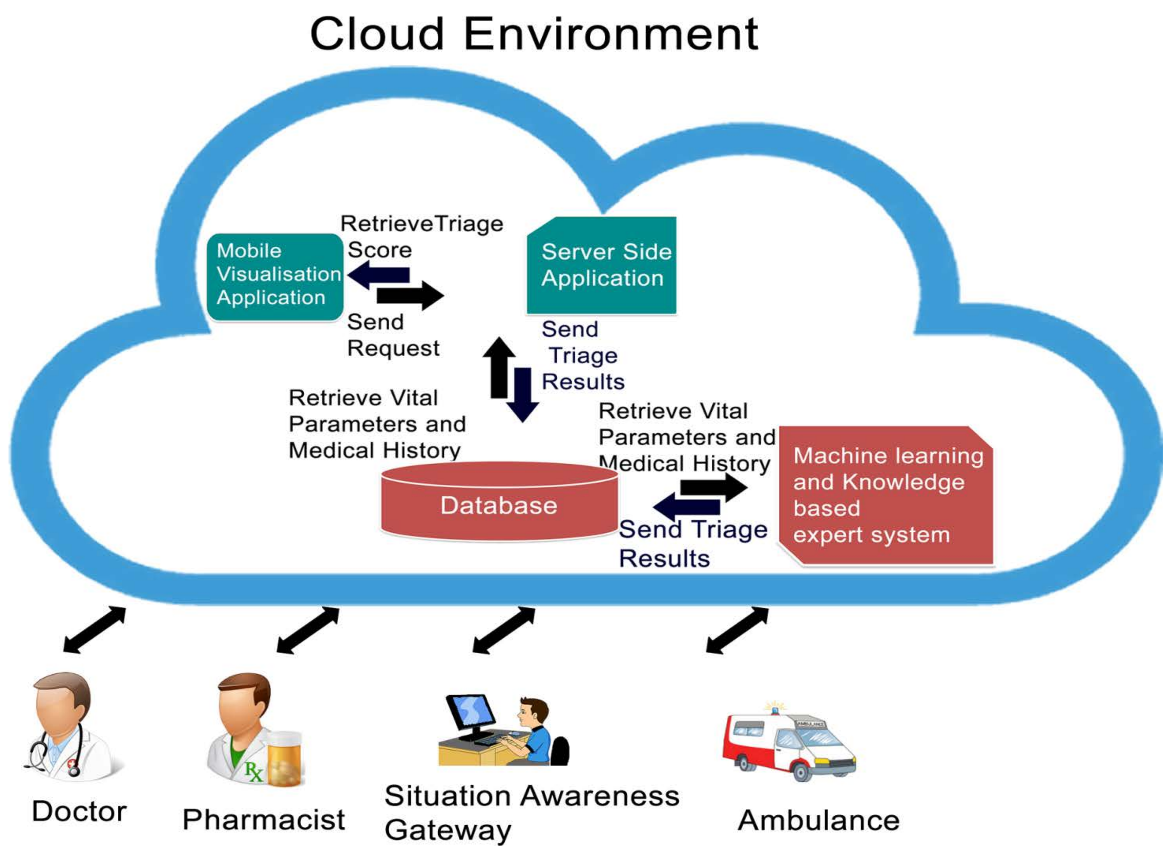
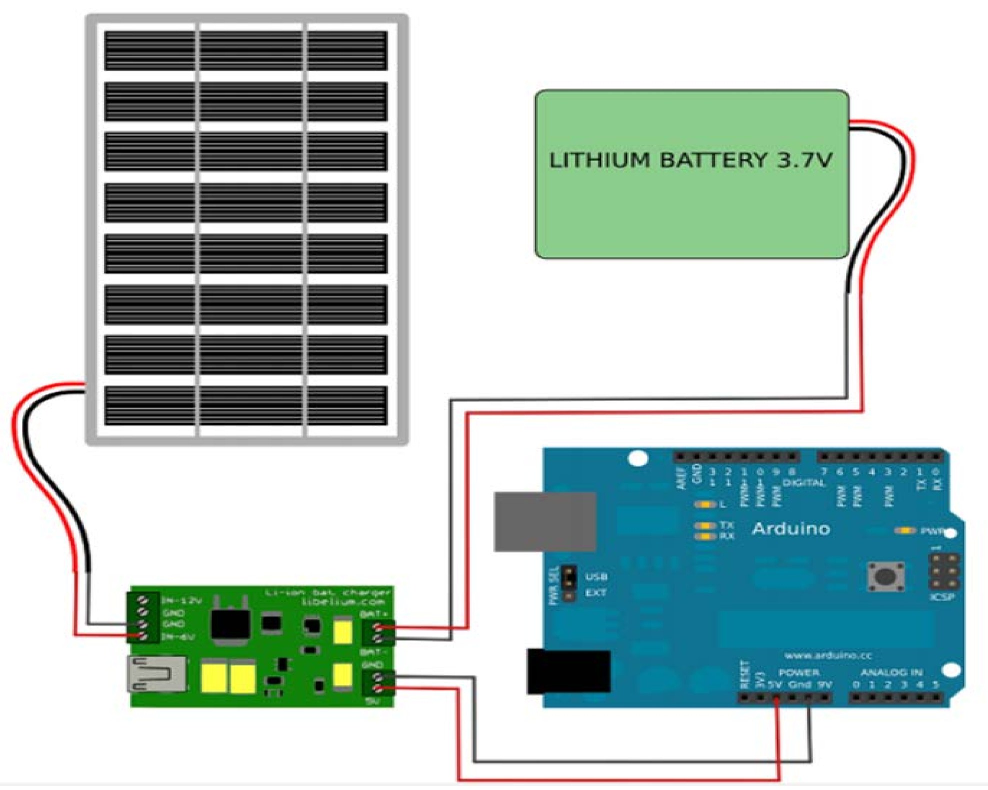
Introduction

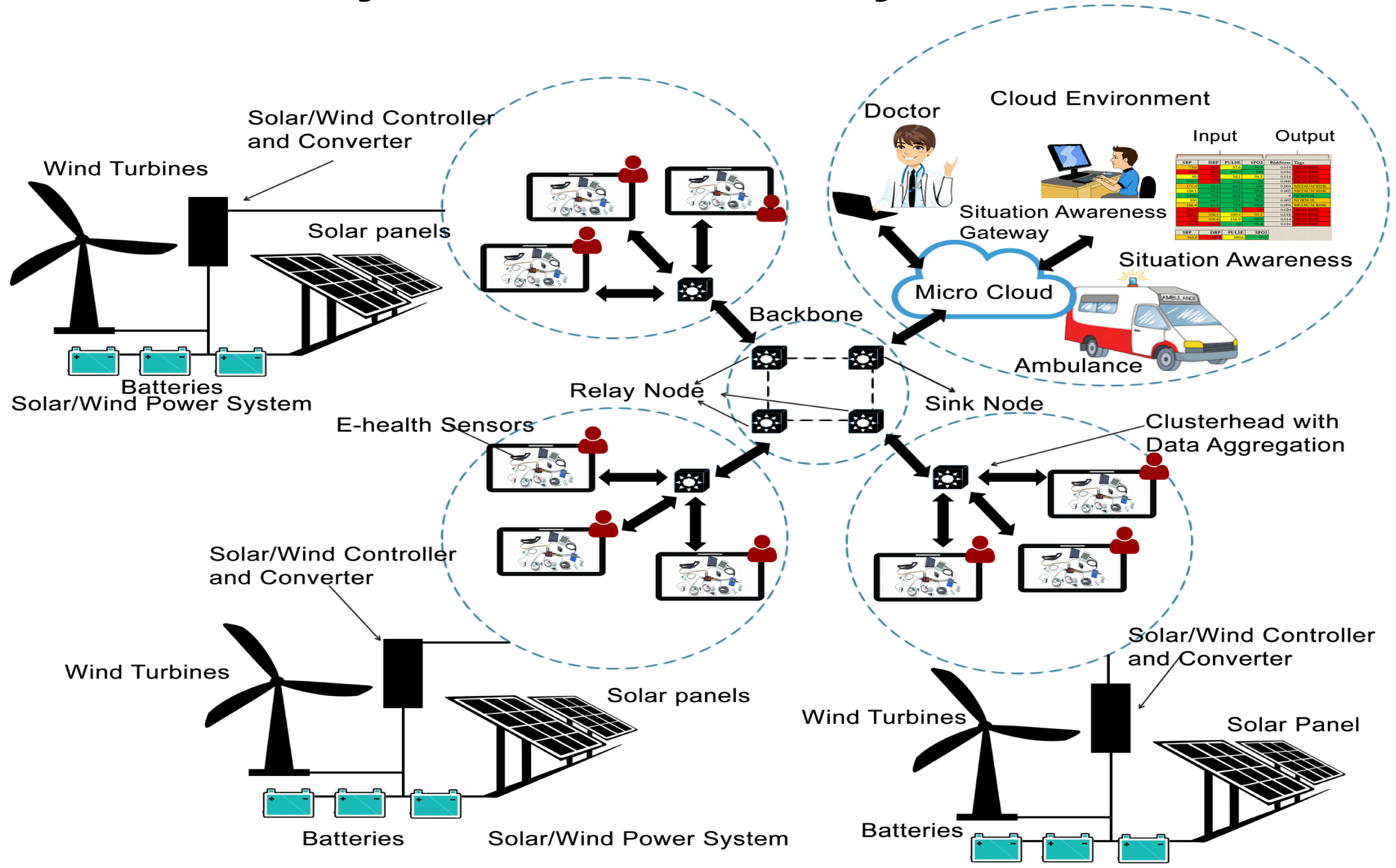
lCyber-healthcare aims at enabling Cyber physicians consultation and treatment of patients via the Internet as well as providing better healthcare management through digitization of all aspects of clinical work: technology, imaging, medications, surgery, rehabilitation, preventive measures, physical therapy, nursing homes, and medical supplies. It provides new opportunities for enhancing health care in the developing world thanks to low acquisition costs and flexible deployment, while improving accuracy by replacing manual operations with fully digitized processes. The public health sector in both rural and urban settings of the developing world can leverage the Cyber-healthcare technology to improve health care management and service delivery. Leapfrogging from poorly prepared to adequately equipped communities, bio-medical researchers in the developing world can also take advantage of the tools provided by these technologies to conduct research and thus reduce the scientific divide in the medical field. This paper addresses some of the issues associated with Cyber-healthcare systems deployments: **Bio-sensor field readiness**, **Sensor readings dissemination**, **Cyber-healthcare Power Supply** and **Patient condition recognition**.



Solar subsystem



The Cyber-healthcare System

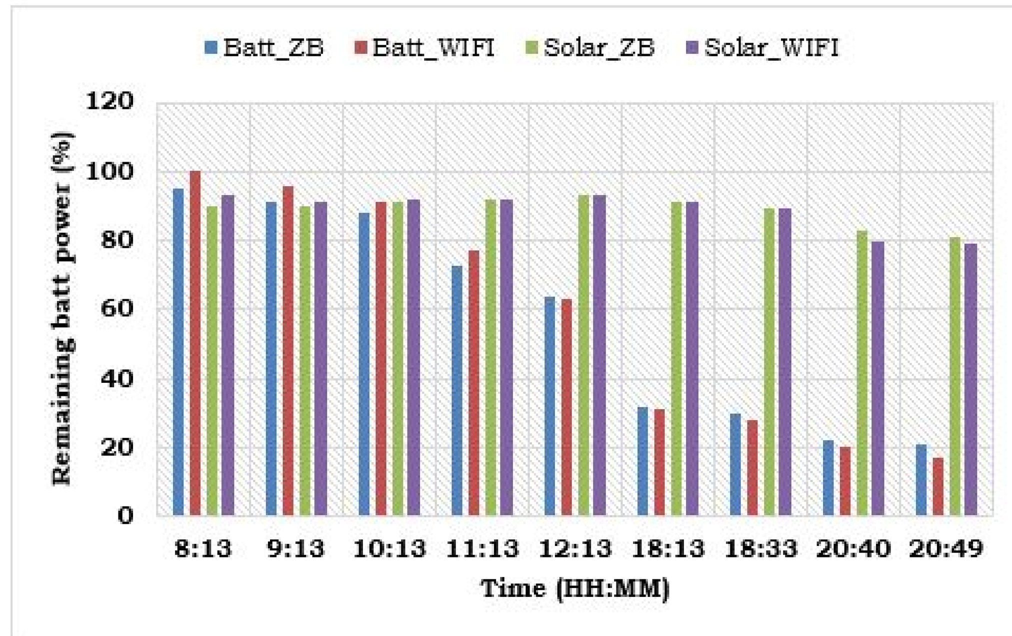


Patient Prioritization Results

Parameters	Multivariate Linear Regression	K-means clustering
Coefficient of determination	0.903	n.a. for unsupervised learning
Accuracy(%)	90.30	n.a. for unsupervised learning
Runtime(seconds)	5.01	14.22 (for only 10 clusters , exponentially grows as the number of clusters grows)
Time Complexity	O(pn+kn) where p is the dimension of each observation (input), k is the number of tasks (dimension of outputs) and n is the number of observations.	Big(O) for Kmeans + Big(O) for Parzen Window O(knT) + O() where k is the number of clusters, n is the number of points and T is the number of iterations.
Recal/Detection	0.769231	n.a. for unsupervised learning
Precision	0.833333	n.a. for unsupervised learning
False Rate	0.6	n.a. for unsupervised learning

Throughput

Battery Usage



Conclusions

A Cyber-healthcare system using off-the-shelf equipment for patient prioritization was presented in this paper. as a first step towards the implementation of low cost healthcare systems for the developing countries. The off-the-shelf e-Health kit used in our experimentation was tested and found ready for field deployment. Two machine learning algorithms to solve the patient prioritization problem were described and compared. They revealed the relative efficiency of the supervised Multivariate Linear regression learning algorithm compared to the unsupervised K-Means algorithm.

Bibliography

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