

On behalf of the e-Health Technical Committee (TC) of the IEEE Communications Society (ComSoc), we wish the readers a very happy and productive Winter 2014 ahead! The contribution for this edition comes from authors in Taipei, Taiwan, and is a description of a real telehealthcare experiences from the collaboration between hospital and academia.

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A Clinical Decision and Support System with Automatically ECG Classification in Telehealthcare

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Telehealthcare is a global trend affecting clinical practice in the world. With the progress and development of telecommunication technologies, telecom facilities have afforded telehealthcare a new approach for chronic disease management. To reduce the cardiologists' loading and to provide a continuously telehealthcare, the Telehealthcare Center at the National Taiwan University Hospital (NTUH) developed a clinical decision support system (CDSS) with automatic recognition of the ECG in real-time analysis. In addition, we adopted the approach of noise reduction and feature extraction for support vector machine

(SVM) implementation with automatic learning algorithms. The automatic interpretation of ECG could provide assistance to physicians in decision-making, especially with large volumes of data. According to the preliminary results of automatic classification models, the system yielded 88.4% sensitivity, for noise detection model, 85.9% specificity for sinus classification model and 89.1% sensitivity for disease classification model, respectively. The present telehealthcare system here is not only a health monitoring system but also an assistant tool in decision-making. Moreover, we also integrated the electronic medical records (EMR) into the system, e.g., prescriptions, food allergy, and drug allergy in past 6 months, etc. The historical records will be displayed on the platform for the case managers and physicians. With this information, the medical staffs could give more adequate advises to patients. Fortunately, it has been indicated by

previous studies that the Telehealth Center at the National Taiwan University Hospital has provided the effectiveness telehealthcare for heart disease patients on clinical outcomes, medical cost, and caregiver burden.

The screenshot shows a web interface for patient data. At the top, there are filters for 'Select Patient' (Active, None, Close) and 'Select Period' (Start Date: 2014/02/15, End Date: 2014/02/28). A table lists patient records with columns: MeasureDate/Time, UploadDate/Time, Heartbeat, Status, InReport, and ECG. A sidebar on the left shows a 'Patient List' with names and IDs like 0002TIOO (B), 0004TIOO, etc.

MeasureDate/Time	UploadDate/Time	Heartbeat	Status	InReport	ECG
2014/02/27 15:53	2014/02/27 15:55	67	read	X	Link
2014/02/26 11:51	2014/02/26 11:52	62	read	X	Link Delete
2014/02/25 17:13	2014/02/25 17:15	67	read	O	Link Delete
2014/02/24 15:08	2014/02/24 15:09	70	read	X	Link Delete
2014/02/20 11:05	2014/02/20 11:07	61	read	X	Link Delete
2014/02/19 14:50	2014/02/19 14:52	65	read	X	Link Delete
2014/02/18 10:52	2014/02/18 10:54	62	read	O	Link Delete
2014/02/17 15:23	2014/02/17 15:24	81	read	X	Link Delete
2014/02/16 09:53	2014/02/16 09:55	64	read	X	Link Delete
2014/02/15 10:33	2014/02/15 10:35	64	read	X	Link Delete

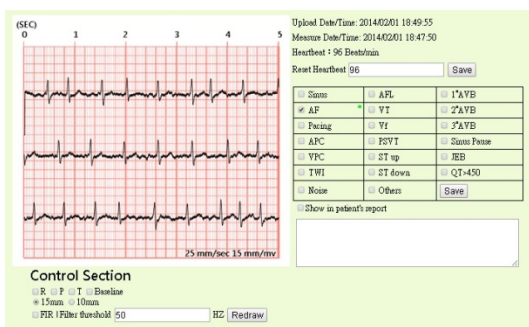


Figure: The interface of ECG diagnosis

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