

The AMPS Insider

An AMPS LLC Magazine

The AMPS Insider is a quarterly magazine dedicated to all AMPS' partners and customers. Published by AMPS, it provides news and information about AMPS' products and initiatives.

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Executive Overview

An annotated ventricular tachycardia (VT) alarm database: Toward a uniform standard for optimizing automated VT identification in hospitalized patients. Product news. AMPS Notebook.

Editorial

We are continuing the **AMPS'** tradition of participation in research projects in this **TAI** issue, as we feature one new paper published in the past quarter:

An annotated ventricular tachycardia (VT) alarm database: Toward a uniform standard for optimizing automated VT identification in hospitalized patients

Background: False ventricular tachycardia (VT) alarms are common during in-hospital electrocardiographic (ECG) monitoring. Prior research shows that the majority of false VT can be attributed to algorithm deficiencies.

Purpose: The purpose of this study was: (1) to describe the creation of a VT database annotated by ECG experts and (2) to determine true vs. false VT using a new VT algorithm created by our group.

Methods: The VT algorithm was processed in 5320 consecutive ICU patients with 572,574 h of ECG and physiologic monitoring. A search algorithm identified potential VT, defined as: heart rate >100 beats/min, QRSs > 120 ms, and change in QRS morphology in >6 consecutive beats compared to the preceding native rhythm. Seven ECG channels, SpO₂, and arterial blood pressure waveforms were processed and loaded into a web-based annotation software program. Five PhD-prepared nurse scientists performed the annotations.

Results: Of the 5320 ICU patients, 858 (16.13%) had 22,325 VTs. After three levels of iterative annotations, a total of 11,970 (53.62%) were adjudicated as true, 6485 (29.05%) as false, and 3870 (17.33%) were unresolved. The unresolved VTs were concentrated in 17 patients (1.98%). Of the 3870 unresolved VTs, 85.7% (n = 3281) were confounded by ventricular paced rhythm, 10.8% (n = 414) by underlying BBB, and 3.5% (n = 133) had a combination of both.

Conclusions: The database described here represents the single largest human- annotated database to date. The database includes consecutive ICU patients, with true, false, and challenging VTs (unresolved) and could serve as a gold standard data- base to develop and test new VT algorithms.

You can find the full article on the [AMPS web site](#).

Products News

The team has been busy this quarter to extend and improve the capabilities of CER-S.

Recent reports by customers that certain models of hard disks, file security, and synchronization services could have a significant impact in the time required by CER-S to open recordings of complex data formats, thus causing delays and reducing the overall performance. Acting on these reports, AMPS investigated the issue and has implemented a new plug-in which reduces by 90% the time needed to load and read those particularly complex holter formats.

To facilitate the integration of CER-S within existing proprietary platforms the team has developed a new system, named CER-SCor. CER-SCor is a set of

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transparent architectural components (APIs) through which the customer can load the holter recordings, trigger their analysis and/or display, and export the produced reports. As CER-SCor deals exclusively with data management and software integration the specific functions of CER-S as certified medical device are not impacted.

CER-SCor is available for licensing both as SaaS (Software as a Service) in fully managed mode and as a component to be installed on the customer's datacenter. Both modes share the same pattern of operation.

AMPS Notebook

Fabio Badilini will participate to the 2023 ISCE Annual Conference held at the Miramonte Indian Wells Resort & Spa Wednesday, March 29 - Sunday, April 2, 2023. The conference program includes several presentations related to standards and regulatory aspects surrounding ECG and AI and you will find a summary of the most relevant presentations in the next TAI issue (2Q23). At the end of the conference Fabio will become ISCE president.

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