Advance Prediction of Ventricular Tachyarrhythmias using Patient Metadata and Multi-Task Networks

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transformative

Over 200,000 patients suffer in-hospital **cardiac arrest** each year in the United States alone, with **only 25% of them surviving.**

We propose a model for the **early prediction of ventricular tachyarrhythmias**, in order to improve the survival rate of patients at risk of cardiac arrest.

ECG Signal Representation

- Features from the **time** and **frequency** domain

- Features based on **non-linear analysis**

- Measuring the change in **consecutive windows**

- Including **patient-level** information as a learned **embedding**

Multi-task Optimization
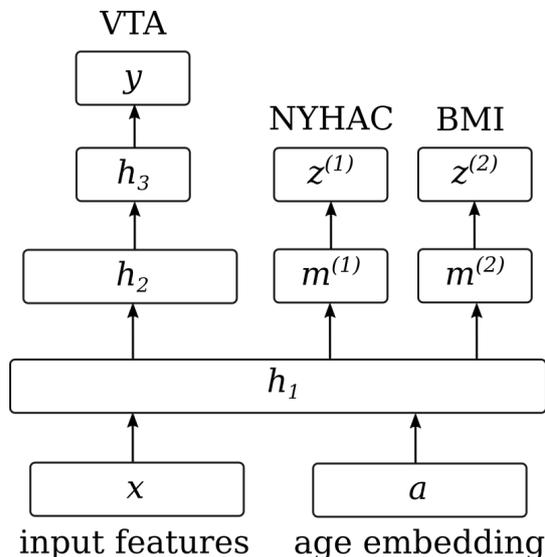
Evaluation on Physionet MVTDB

	Accuracy
Baseline	62.26
+ windowed features	71.03
+ age embedding	73.52
+ multi-task optimization	**74.02**

A novel neural model for **prediction of VTA** 60 seconds in advance.

Consistent improvement from each of the modifications.