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Artificial Intelligence for Classification of the Electrocardiogram

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Introduction

which can be used to diagnose a patient.



- nosis and binary[1]
- the distribution of the dataset it is trained on

Aim

be used in other populations than what is trained on

Methods

12 Lead, median heart beat



Fig. 2: Illustration of a VAE which compresses the median heart beat into 20 features and reconstructs it.

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Methods cont.

Fig. 4: Examples of two different reconstructions of the median



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Discussion

- This algorithm has the advantage that
 - newer ECGs can easily become part of the point cloud and thereby contribute to further diagnoses
 - diagnoses can be changed by simply relabeling, no retraining required
 - other establishments can use their own ECGs and diagnoses to construct the point cloud
- The VAE ensures that the features are interpretable, which means that it is possible to take a real ECG and adjust the feature that encodes a diagnosis eg. "heart failure" to see what the ECG would look like with heart failure

Next Work

- Analyzing the feature space of the VAE to make sure that it is sufficiently linear in nature so the algorithm is feasible
- Analyze the features to find out which morphologies or diseases they encode in order to simulate different scenarios

References

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