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Heart-Rate Resistance Electrocardiogram Identification Based on Slope-Oriented Neural Networks

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Abstract : For electrocardiogram (ECG) biometrics system, it is a tedious process to pre-install user's high-intensity heart rate (HR) templates in ECG biometric systems. Based on only resting enrollment templates, it is a challenge to identify human by using ECG with the high-intensity HR caused from exercises and stress. This research provides a heartbeat segment method with slope-oriented neural networks against the ECG morphology changes due to high intensity HRs. The method has overall system accuracy at 97.73% which includes six levels of HR intensities. A cumulative match characteristic curve is also used to compare with other traditional ECG biometric methods.

Keywords : high-intensity heart rate, heart rate resistant, ECG human identification, decision based artificial neural network
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