Non-Invasive Blood Pressure Estimation from Photoplethysmography Signals using Artificial Neural Networks

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***Abstract*—This work focuses on the potential of artificial neural networks to classify biological signals in a healthcare setting, specifically in the estimation of blood pressure from photoplethys- mography signal readings obtained via medical devices. This signal is known to have valuable cardiovascular information and has been related to heart rate and blood pressure pulsewave. Among the literature there have been attempts to correlate this signal directly to a single blood pressure value and/or classify it into one of the blood pressure clinical states (e.g. Hypotension, Normal, Pre Hypertension, Stage 1 Hypertension, Stage 2 Hypertension). We propose models based on artificial neural networks that achieve similar performance to those in previous works, without needing engineered nor demographic features. These models are capable of learning how to extract descriptive features from only the raw photoplethysmography signals, and use them for classification into a blood pressure class. Test results are promising and validate the usefulness of artificial neural network architectures for this task.**

***Keyword*—Artificial Neural Networks, PPG, Blood Pressure**

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