



RingConn Advances Wearable Health Research with New Study in Nature Portfolio Journal npj Digital Medicine

Descrizione

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The study, "Large-scale bilateral cardiovascular monitoring via wearable rings," analyzes 97,559 valid ring-PPG samples from 1,810 participants, providing new insights into bilateral wearable sensing for cardiovascular monitoring.

NEW YORK, Aug. 12, 2026 /PRNewswire/ A major step toward overcoming long-standing accuracy bottlenecks in consumer wearables, a joint research team from Ninenovo (parent company of RingConn), Professor Cheng Chen's team at Shanghai Jiao Tong University, and Mianyang Central Hospital has published a new study in npj Digital Medicine, a Nature Portfolio journal, establishing what the researchers describe as the first large-scale bilateral ring-PPG benchmark. The study comprised 97,559 valid PPG samples from 1,810 participants, 7,478 paired blood pressure measurements, and found that combining synchronized PPG signals from both hands can substantially improve heart rate estimation, while also revealing important limitations in bilateral wearable approaches to blood pressure estimation and highlighting bilateral signal differences as a potential indicator of measurement reliability.

Cardiovascular disease remains one of the world's leading causes of death, making continuous and accessible cardiovascular monitoring an increasingly important area of health research. Photoplethysmography (PPG), a non-invasive optical sensing technology, has become a cornerstone of consumer wearables such as smartwatches and smart rings, enabling physiological signals to be captured continuously in everyday life. Yet most wearable PPG systems rely on measurements from a single location, typically one hand or one finger, implicitly assuming that signals collected from the left and right sides of the body are sufficiently consistent to be interchangeable. Whether this assumption holds true, however, has rarely been systematically investigated. This question became the starting point for a collaborative research effort involving academic, clinical, and industry partners to explore cardiovascular monitoring through bilateral ring-based PPG.

Analyzing 97,559 valid PPG samples, the study demonstrated that bilateral signals dramatically enhance measurement reliability. Synchronized dual-hand tracking reduced heart rate means absolute error (MAE) from 10.65 bpm (population baseline) down to 3.21 bpm, and further to 2.59 bpm when signal differences remained below defined thresholds. Furthermore, these performance gains proved consistent across 12 distinct AI model architectures. While blood pressure estimation improvements were more modest (systolic MAE improved from 13.81 to 12.36 mmHg; diastolic from 9.27 to 8.21 mmHg), the findings confirm that signal consistency and sensor placement are just as critical as raw data volume.

The study opens new possibilities for the evolution of wearable health technology. For Ninenovo and its flagship brand RingConn, this publication reinforces a shared commitment to advancing not only hardware, but also the underlying algorithms and data science of digital health. Through ongoing academic and clinical collaborations, Ninenovo continues to leverage cutting-edge research to transform raw physiological data into trustworthy, everyday health solutions.

*RingConn smart rings are not intended to diagnose, treat, cure, or prevent any disease or medical condition.

About RingConn

Established in 2021, RingConn is a user-centric company, driven by continuous innovation, to provide professional, continuous, and thoughtful health monitoring products and services. RingConn is dedicated to becoming users' most trusted guardian for their physical and mental well-being.

About Ninenovo

As the parent company of RingConn, Ninenovo was founded by world-class scientists to empower human health through meaningful innovation. By integrating advanced technology into daily life, Ninenovo safeguards global well-being through RingConn.

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