

IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS

J-BHI Special Issue on “Camera-based Health Monitoring in Real-world Scenarios”

Remote cameras have been used to measure physiological signals from human face and body, thereby eliminating mechanical contact with the skin that are common in wearable sensors. Advancements in biomedical optics, computer vision and AI enabled various camera-based measurements, including vital signs like heart rate, respiration rate, SpO₂, blood pressure, and physiological markers/indicators that have diagnostic capabilities. Image and video analysis also permit the measurement of human semantics, context and behaviours that provide new insights into health informatics (e.g. facial analysis for pain or delirium assessment), which is an unique advantage of camera sensors as compared to biomedical sensors. Camera-based health monitoring will bring a rich set of compelling healthcare applications that directly improve upon contact-based monitoring solutions in various scenarios like clinical units (e.g. ICU, NICU) and assisted-living homes (e.g. senior center, confinement center), impacting people’s care experience and quality of life. After years of R&D in this field, it is time to bring the concepts and prototypes (setup and algorithms) from labs to real-world scenarios to demonstrate their actual performance and societal values with concrete use cases like clinical trials and pre-development showcases. This special issue focuses on the latest developments and technologies pertaining to *Camera-based Health Monitoring in Real-world Scenarios*, specifically on innovation, validation and demonstration in healthcare applications.

Only high-quality and original contributions will be considered. Topics of interest include, but are not limited to

- Novel/improved camera sensors and sensor fusion for health monitoring, and image/signal processing algorithms that create new measurements (e.g. physiological signals or contextual signals) for health assessment.
- Novel developments and applications in high-acute and low-acute clinical settings like ICU, HDU, NICU, CCU, and general ward, and integrations with existing medical devices like MR/CT triggering and gating.
- Novel developments and applications in home-based settings, including baby monitoring, elderly care, assisted-living homes, chronic disease management, etc.
- Novel developments and applications in fitness and wellness, including fitness cardio training, sports and behavior analysis, affective computing, dietary monitoring, etc.
- Novel developments and applications in mobile settings, including driver monitoring in automotive, hand-held/portable devices (e.g. smart phone), wearable glasses, etc.
- Novel developments and applications in entertainment and communication, including avatars, remote meetings, AR/VR-based mixed reality, etc.
- Novel developments and applications in animal care and farming, including contactless physiological measurement, behavior analysis, identification, and health monitoring of animals.
- New public benchmarks, datasets and literature reviews in this field.

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Key Dates

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