Miniature Health-Care Ultrasonic Imaging System

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Technology description

The increasing market of mobile health indicates the growing consumer interest in low-cost and easy-to-use solutions for monitoring personal health. Weight, body-fat percentage and blood pressure are several critical indexes relating to a variety of chronic disease.

Weight scale integrated with impedance measuring devices give a coarse full-body measurement on both weight and body-fat percentage but is susceptible to multiple error sources such as humidity. For fitness use, there is also lack of a device to monitor the effectiveness of local muscle building. On the other hand, current blood pressure gauge (sphygmomanometer) is hard to use without calibration and proficiency training. Both the devices are obviously too bulky to be portable and hence not a good solution for personal-health monitoring.

Alternatively, ultrasonic imaging, now widely used in medical field, provides accurate and local body-index measuring such as local body-fat assessment by measuring real thickness of body-fat and blood-pressure measuring by Doppler imaging on blood flow speed. The accuracy and local-body part measuring solve the problems of traditional devices but the size, complexity and huge amount of power remains issues to be solved.

To meet these challenges, investigators at the University of California, Davis and U.C. Berkeley have jointly developed a novel miniature, ultrasonic imaging system using a combination of microelectronic devices that measures the fat and muscle thickness at a particular human body part for health-care purposes and muscle-training monitoring. The system also has the capability of measuring blood flow and blood pressure. Due to the small size and single, low-voltage power supply of the system, this technology can also be integrated into portable devices for mobile health care.

Additional Information

Additional Technologies by these Inventors

MEMS Ultrasonic Fingerprint ID System

Application area

• Body fat and muscle thickness measurement.
• Muscle training monitoring.
• Blood flow monitoring.
• Blood pressure monitoring and measurement.
• Local body part ultrasonic imaging.

Advantages

• Integrates into portable devices for mobile health care.
• Performs ultrasonic imaging with a single supply.
• Low cost for monitoring personal health.
• Monitors effectiveness of local muscle building.

Institution

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