**2020年英特尔杯大学生电子设计竞赛嵌入式系统专题邀请赛**

**参赛队作品简介**

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| **作品题目****（中英文对照）** | 基于多模态生理及行为数据融合的大众健身智慧指导系统Multimodal Physiological and Behavioral Data Fusion Based Mass Fitness Intelligent Guidance System  |
| **作品****简介****（中****英文****对照****，中****文限****500字以****内）** | 运动健康是人类生命健康的重要部分。体育锻炼可以促进人的身体健康，是幸福生活最重要的指标，是实现全民健康最积极、最有效也是最经济的手段。当今社会，人们处于快节奏、高效率、强竞争的环境，体育运动更是改善不良情绪、缓解压力的重要途径。随着全民健身的推进，健身锻炼成为潮流，人民对身体健康的追求日益提高。但与此同时，用户健身动作规范性低，长期健身得不到回报的的情况也依然长期存在。本项目旨在预防这些情况的发生，促进全民健身的更高水平发展。本项目将主要基于生理及行为数据的多模态参数融合，指导用户的健身运动。ToF、摄像头、智能心电衣等设备将分别采集健身器械的运动数据、用户的姿态及心率等参数，并在经过DE10-Nano开发板的数据处理后，通过Wi-Fi传输至Intel边缘计算终端。Intel边缘计算终端将会对接收到的数据进行数据融合，并通过微信小程序实时显示出用户健身的姿态，且以语音播报的形式纠正用户错误的姿态。在健身结束后，系统将会将用户健身中的数据进行多模态融合，并且结合已知的用户身体数据为用户生成属于他的健身报告；通过健身报告中反馈的健身评分及身体素质评分，用户可以以可视化的形式长期监测自己的身体素质的提升，从而达到激励用户健身的效果。Exercise health is an important part of human life health. Physical exercise can promote people's physical health, which is the most important indicator of a happy life and is the most active, effective, and economical means to achieve universal health. In today's society, people are in a fast-paced, high-efficiency, and competitive environment and sports is an important way to improve bad moods and relieve stress. With the promotion of national fitness, fitness exercise has become a trend, and people's pursuit of physical health is increasing. However, at the same time, the situation of low standardization of users' fitness movements and unrewarded long-term fitness persists. This project aims to prevent these situations and promote the development of a higher level of fitness for all.ToF, camera, and smart cardio-suit will collect the exercise data of fitness equipment, user's posture, heart rate, etc., and transmit them to Intel edge computing terminal through Wi-Fi after the data processing by the DE10-Nano development board. The computing terminal will fuse the received data and display the user's posture in real-time through the WeChat app, and correct the user's wrong posture in the form of a voice broadcast. At the end of fitness, the system will fuse the user's fitness data in multi-modality and generate a fitness report for the user by combining the known user's body data; through the fitness score and fitness score feedback in the fitness report, the user can monitor the improvement of his fitness in a visual form for a long time, thus achieving the effect of motivating the user to work out. |

注： 1．请使用小4号字（12号字），单倍行距填写；

2．每支参赛队限一名指导教师；

3．参赛队员姓名应与正式报名表一致；

4．作品题目应与作品设计报告一致。