

Using Inertial Measurement Unit to Evaluate the Balance Ability of Hikers

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Abstract : Falls are the most common accidents during mountain hiking, especially in high-altitude environments with unstable terrain or adverse weather. Balance ability is a crucial factor in hiking, effectively ensuring hiking safety and reducing the risk of injuries. If balance ability can be assessed simply and effectively, hikers can identify their weaknesses and conduct targeted training to improve their balance ability, thereby reducing injury risks. With the widespread use of smartphones and their built-in inertial sensors, this project aims to develop a simple Inertial Measurement Unit (IMU) balance measurement technique based on smartphones. This will provide hikers with an easy-to-use, low-cost tool for assessing balance ability, monitoring training effects in real-time, and continuously tracking balance ability through uploading cloud data uploads, facilitating personal athletic performance.

Keywords : balance, IMU, smartphone, wearable devices

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