

Extraction of tackle signals from GPS inertial sensor data using deep learning

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In recent years, top rugby teams have been installing wearable GPS sensors on their players to record their movement characteristics (GPS coordinates, acceleration, angular velocity, and geomagnetism) during games and practices, and are seeking ways to utilize the data. In our previous research, we succeeded in calculating and quantifying the torque generated in the joints of the human body using the measurement signals of inertial sensors as input. In the same study, it was found that the output tendency of the measurement waveform obtained from the sensor has a characteristic depending on the movement [1]. In this study, we develop a deep learning program that automates the extraction and evaluation of electrical signals corresponding to tackling motions from sensor data. By utilizing the output data, the prevention and awareness of serious head and neck injuries caused by tackling will be improved, and the safety and performance of rugby players will be enhanced. In addition, advanced use of the data will be possible. The Neural Network Console, a neural network development environment provided by Sony Network Communications Corporation, is used to develop and train machine learning programs. This time, we acquired the knowledge of machine learning, and made a prototype AI model and ran it.

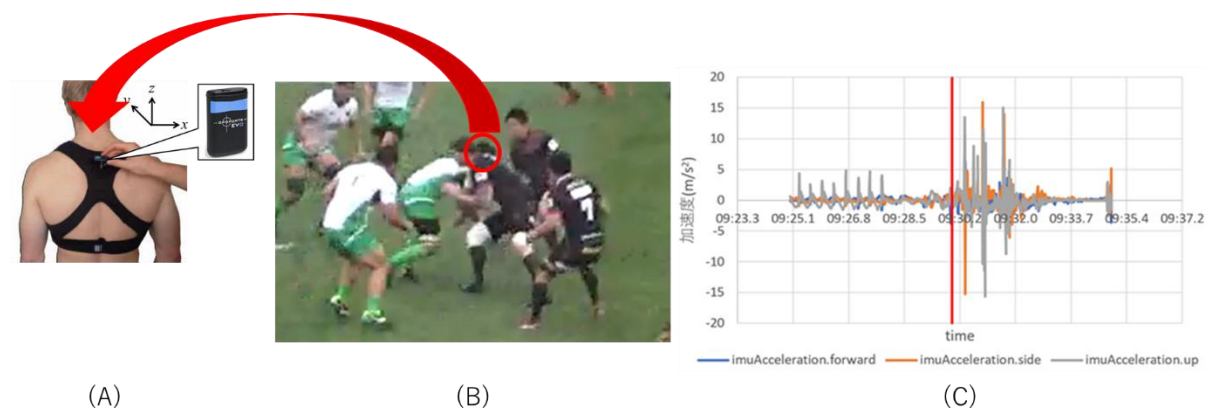


Fig.1 Mounted position of inertial sensor and measurement signal. (A) Mounted position of wearable GPS sensor (GPS-EVO, made by GPS SPORTS). (B) Tackle scene. (C) Signal equivalent to tackling motion.

REFERENCES

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