Arm Muscle Pressure Pattern Dataset Using Electromyography (EMG) for Artificial Intelligence (AI) Based Tennis Player Stroke Assessment

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ABSTRACT

Training for prospective tennis players during a pandemic requires a training model that applies health protocols. The practice of hitting techniques for prospective tennis players can use a system that applies the concept of IoT (Internet of Things) using EMG (electromyography) and AI (Artificial Intelligence) so that the stroke assessment can be seen and assessed by the coach without having direct contact with the prospective tennis players who are being trained . The stroke assessment uses data generated by several sensors, including the EMG arm muscle tension sensor mounted on the player's arm and the IMU sensor mounted on the tennis racket used. This research will develop a prototype of an AI-based tennis training system using EMG, starting with forming a dataset needed in developing an AI-based system.

The dataset is taken from recordings of several tennis player movements that have accomplished as a reference when prospective tennis players will practice. Reference movement recording data will be sent to a computer and forwarded to a cloud server to then be processed and analyzed into a dataset for the development of an AI-based tennis player training assessment system. Furthermore, based on the dataset that has been formed, an AI-based training system can be developed and this dataset is used as a reference for prospective players in training. The training system is also connected to the cloud server so that the training result data can be accessed by the coach to assess the data of the prospective tennis player's stroke results while practicing without having to be in the same place and time where the prospective tennis player is practicing. The target of this research is the development of a system prototype and data collection for reference players, data processing and analysis to produce a dataset for the development of a tennis player stroke assessment system using AI-based EMG.

Kata Kunci: *AI, EMG, Tennis Stroke, Assesment*