KONTROL GAME RUNNER BÈRBASIS POSE TUBUH MENGGUNAKAN MEDIAPIPE DAN MULTI-LAYER PERCEPTRON (MLP)

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ABSTRAK

Perkembangan teknologi *Human-Computer Interaction* (HCI) telah memungkinkan terciptanya pengalaman interaksi yang lebih imersif, salah satunya adalah kontrol permainan berbasis gerakan tubuh. Penelitian ini bertujuan untuk mengembangkan sistem kontrol game runner menggunakan framework MediaPipe dan algoritma Multi-Layer Perceptron (MLP). Framework MediaPipe digunakan untuk mendeteksi 33 landmark tubuh manusia dan mengekstrak sudut-sudut penting, sedangkan MLP digunakan untuk mengenali dan mengklasifikasikan pose tubuh berdasarkan data tersebut. Sistem kontrol ini diimplementasikan pada game "Cat Runner," yang membutuhkan respons cepat dan akurasi tinggi dari gerakan pemain. Penelitian melibatkan pengumpulan dataset pose tubuh, pengolahan data menjadi fitur angular, pelatihan model MLP, serta validasi sistem. Hasil penelitian menunjukkan bahwa sistem mampu mengenali pose tubuh dengan akurasi tinggi dan memberikan kontrol permainan yang responsif. Dengan demikian, integrasi MediaPipe dan MLP dalam sistem kontrol permainan berbasis pose tubuh menunjukkan potensi besar untuk pengembangan teknologi HCI yang lebih interaktif dan alami.

Kata Kunci: Human-Computer Interaction (HCI), MediaPipe, Multi-Layer Perceptron (MLP), kontrol permainan, pose tubuh, game runner.

BODY-POSE-BASED GAME RUNNER CONTROL USING MEDIAPIPE AND MULTI-LAYER PERCEPTRON (MLP)

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ABSTRACT

The development of Human-Computer Interaction (HCI) technology has enabled the creation of more immersive interaction experiences, one of which is body-motion-based game control. This study aims to develop a game runner control system using the MediaPipe framework and the Multi-Layer Perceptron (MLP) algorithm. The MediaPipe framework is utilized to detect 33 human body landmarks and extract key angles, while MLP is used to recognize and classify body poses based on the extracted data. The control system is implemented in the game "Cat Runner," which requires quick response and high accuracy from player movements. The study involves collecting a body pose dataset, processing the data into angular features, training the MLP model, and validating the system. The results show that the system can recognize body poses with high accuracy and provide responsive game control. Thus, the integration of MediaPipe and MLP in body-pose-based game control systems demonstrates significant potential for the development of more interactive and natural HCI technologies.

Keyword: *Human-Computer Interaction (HCI), MediaPipe, Multi-Layer Perceptron (MLP), game control, body pose, game runner.*