

ABSTRAK

Universitas Pembangunan Nasional “Veteran” Jakarta (UPNVJ) memiliki dua wilayah kampus, salah satunya di Limo, Depok, yang menghadapi tantangan dalam penyediaan informasi tata letak gedung dan fasilitas. Berdasarkan wawancara dengan tiga Wakil Dekan II di kampus Limo, diketahui kurangnya media informasi visual menyulitkan mahasiswa, staf, dan pengunjung dalam mengenali lokasi gedung dan ruang yang ada. Penelitian ini bertujuan mengembangkan aplikasi Augmented Reality (AR) berbasis Android dengan metode *markerless location based tracking* untuk menampilkan informasi gedung dan ruang auditorium kampus Limo dalam bentuk objek 3D. Setiap lantai juga dilengkapi informasi ruangan dan deskripsi fungsinya. Aplikasi ini dikembangkan menggunakan Unity 3D, memanfaatkan pembacaan lokasi dari *smartphone*, serta menerapkan algoritma Haversine untuk meningkatkan akurasi pelacakan lokasi. Hasil penelitian menunjukkan bahwa algoritma ini mampu mengurangi selisih jarak rata-rata hingga 4.0666 meter dibanding hasil pengukuran Map Area Measure, atau 0.03 meter lebih baik dibanding dengan hasil *euclidean distance*. Aplikasi ini berhasil menampilkan informasi 3D secara lengkap dan berjalan optimal di berbagai perangkat Android. Penelitian ini diharapkan dapat membantu sivitas akademika dan pengunjung dalam mengenal lingkungan kampus Limo UPNVJ.

Kata kunci: *Augmented Reality, markerless tracking, location, algoritma Haversine*

ABSTRACT

Universitas Pembangunan Nasional “Veteran” Jakarta (UPNVJ) has two campus areas, one of which is located in Limo, Depok, and faces challenges in providing information about building layouts and available facilities. Based on interviews with three Vice Deans II at the Limo campus, it was found that the lack of visual information media makes it difficult for students, staff, and visitors to recognize the locations of buildings and rooms. This study aims to develop an Android-based Augmented Reality (AR) application using a markerless location-based tracking method to display information about buildings and the auditorium room at the Limo campus in the form of 3D objects. Each floor is also equipped with room information and descriptions of their functions. The application was developed using Unity 3D, utilizing smartphone location data and implementing the Haversine algorithm to improve location tracking accuracy. The results show that the algorithm can reduce the average distance error to 4.0666 meters compared to Map Area Measure, which is 0.03 meters more accurate than using Euclidean distance. The application successfully displays complete 3D information and runs optimally on various Android devices. This research is expected to help the academic community and visitors better understand the Limo UPNVJ campus environment.

Keyword: *Augmented Reality, markerless tracking, location, Haversine algorithm*