

## ABSTRAK

**Kadek Surya Adi Saputra** (2020), Analisis Pengaruh Jenis *Marker* dan Media *Marker Laminasi* Pada Kualitas *Augmented Reality* Batuan Beku Dengan Metode *Marker-Based Tracking*. Tesis, Ilmu Komputer, Program Pascasarjana, Universitas Pendidikan Ganesha.

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Kata kunci: *augmented reality*, *marker-based tracking*, *AR-Book*, batuan beku, obyek tiga dimensi, jenis *marker AR*, media laminasi *AR-Book*.

Penelitian ini bertujuan untuk: (1) merancang dan mengimplementasikan teknik *marker-based tracking* pada *augmented reality* batuan beku, dan (2) Mengukur akurasi pendeteksian (jenis *marker* dan media laminasi) yang berbeda-beda melalui analisis penggunaan metode *marker-based tracking* pada *augmented reality book*. Terdapat dua belas (12) jenis batuan beku yang akan digunakan dalam penelitian ini. Data batuan yg telah terkumpul dikelompokkan dalam beberapa kategori-kategori tertentu berdasarkan pada data jenis *marker*, media laminasi, waktu kemunculan obyek, jarak dan kondisi pencahayaan yang tertentu. Data dianalisis dengan menggunakan pengkategorian berdasarkan hasil kecepatan waktu pendeteksian obyek tiga dimensi masing-masing variable uji. Hasil penelitian menunjukkan bahwa aplikasi *augmented reality* batuan beku dengan metode *marker-based tracking*: (1) Hasil pengujian menunjukkan bahwa media *marker* dan media laminasi yang berbeda memiliki pengaruh terhadap kecepatan pendeteksian. dan (2) Berdasarkan hasil pengamatan bahwa jenis *marker* hitam-putih dengan media laminasi *doff* presentase keberhasilan memunculkan obyek ialah 100% dengan kisaran waktu 0,600 detik sampai 1,063 detik. Hal ini lebih baik dibandingkan dengan jenis *marker* warna. Berdasarkan hasil pengamatan untuk *marker* warna dengan laninasi *doff* atau *glossy* presentase keberhasilan 60% sampai 40% dengan kisaran waktu 1,163 detik sampai 10,060 detik dalam memunculkan obyek tiga dimensi (3D). Berdasarkan pengamatan yang dilakukan, performa dikatakan *ideal* apabila waktu antara pendeteksian *marker* dan memunculkan obyek 3D tergolong sangat cepat. Penelitian selanjutnya diharapkan dapat dikembangkan menggunakan pengujian berdasarkan ukuran besar dan kecilnya ukuran *marker* terhadap keberhasilan memunculkan obyek tiga dimensi (3D) dan aplikasi dapat dikembangkan dengan metode yang berbeda misalkan metode *markerless*.

## ABSTRACT

**Kadek Surya Adi Saputra** (2020), *Analysis of the Effect of Marker Types and Laminated Marker Media on the Quality of Augmented Reality of Igneous Rocks Using the Marker-Based Tracking Method*. Thesis, Computer Science, Graduate Program, Ganesha University of Education.

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*Keywords: augmented reality, marker-based tracking, AR-Book, igneous rock, three-dimensional objects, AR marker type, AR-Book lamination media.*

*This study aims to: (1) design and implement marker-based tracking techniques on augmented reality igneous rocks. And (2) measuring different detection accuracy (marker types and lamination media) through analyzing the use of the marker-based tracking method in the augmented reality book. There are twelve (12) types of igneous rock that will be used in this study. The data processing that has been collected is then grouped into certain categories based on the type of marker and laminate media data, the time when the object appears, the distance and lighting that have been determined. The development in this study used the waterfall model and the data in this study were collected using the observation check list. The data were analyzed using categorization based on the results of the detection time velocity of the three-dimensional object of each test variable. The results showed that the application of augmented reality igneous rock with the marker-based tracking method: (1) Based on the test results, it was true that the presence of different types of markers and lamination media had an effect on the speed of detection. And (2) Based on the observation that the black-and-white marker type with matte lamination media, the percentage of success in bringing up the object is 100% with a time range of 0.600 seconds to 1.063 seconds compared to the type of color marker with matte / glossy lining with a success percentage of 60% to 40%. with a time range of 1.163 seconds to 10.060 seconds to bring up three-dimensional (3D) objects. Based on the observations made, the performance is said to be ideal if the time between marker detection and 3D object creation is very fast. Further research is expected to be developed using testing based on the size of the marker and the size of the marker on the success of bringing up three-dimensional (3D) objects and applications can be developed with different methods, for example the markerless method.*