

**EXPERIMENTAL COMPARISON OF GROUND PLANE
DETECTION SPEED ACROSS MOBILE PLATFORMS**

NON-REGULAR THESIS - SCIENTIST PATH

Submitted to fulfill one of the requirements for achieving a Bachelor's degree
Information Systems Study Program



compiled by:

LAURA LADIESGA

22.12.2432

to

**COMPUTER SCIENCE FACULTY
AMIKOM UNIVERSITY YOGYAKARTA
YOGYAKARTA FAKULTAS ILMU KOMPUTER**

2026

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CONSENT PAGE

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22.12.2432

approved by the Supervising Lecturer
on March 2, 2026

Supervising Lecturer,



Caraka Aji Pranata, M.Kom
NIK. 190302687

APPROVAL PAGE
NON-REGULAR THESIS - SCIENTIST PATH
EXPERIMENTAL COMPARISON OF GROUND PLANE DETECTION
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Laura Ladiesga

22.12.2432

Has been defended before the Examination Board
on March 2, 2026

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This thesis has been accepted as one of the requirements
for obtaining a Bachelor of Computer Science degree
March 2, 2026

DEAN OF FACULTY OF COMPUTER SCIENCE



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The undersigned,

Student name : Laura Ladiesga
NIM : 22.12.2432

Declare that the work with the following titles:

Experimental Comparison of Ground Plane Detection Speed Across Mobile Platforms

Supervising Lecturer: Caraka Aji Pranata, M.Kom

1. The work is completely ORIGINAL and has NEVER been submitted for an academic degree, either at AMIKOM University Yogyakarta or at other universities.
2. The work is an original idea, formulation or research, and I have a CONTRIBUTION to the work.
3. In this paper, there are no other people's works or opinions, unless they are clearly stated in writing as a reference in the manuscript with the author's name mentioned and mentioned in the Bibliography or References in this paper.
4. The software used in this study is entirely the responsibility of ME, not the responsibility of Universitas AMIKOM Yogyakarta.
5. I make this statement in fact, if in the future there are irregularities and inaccuracies in this statement, then I am willing to accept ACADEMIC SANCTIONS with the revocation of the degree that has been obtained, as well as other sanctions in accordance with the applicable norms in Higher Education.

Yogyakarta, March 2, 2026

Which states,



Official stamp of Universitas AMIKOM Yogyakarta, featuring the university's logo and the text "METTERAI TEMPEL" and "4AN0240477310". A handwritten signature is written over the stamp.

Laura Ladiesga

DEDICATION PAGE

With gratitude, the author presents this thesis as part of the academic process and a form of responsibility in studying in the Information Systems Study Program. In the preparation process, the author is not separated from various obstacles and sacrifices, but also filled with prayers, enthusiasm, and support from various parties. Therefore, this thesis is presented as an expression of gratitude and respect to those who have contributed and assisted in the author's academic journey.

This thesis is presented by the author to:

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FOREWORD

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Yogyakarta, 2 Maret 2026

Penulis

ABSTRACT

Markerless Augmented Reality (AR) technology has become increasingly important in various applications, yet its performance varies significantly across different platforms. This study conducts a comparative experimental analysis of ground plane detection performance between iOS and Android platforms using the Vuforia-based KreasiFurniture application. The research examines detection speed under varying lighting conditions (indoor and outdoor) and camera distances (50 cm, 100 cm, and 150 cm) through systematic testing with five repetitions per condition. Data were analyzed using Three-Way ANOVA with IBM SPSS Statistics 25. Results demonstrate that iOS achieves significantly faster and more consistent detection (mean = 1.402 seconds, SD = 0.143) compared to Android (mean = 1.541 seconds, SD = 0.235), with a statistically significant difference of 0.139 seconds ($p = 0.003$). The optimal detection distance was found at 100 cm for both platforms ($p = 0.018$). While lighting conditions showed no significant main effect ($p = 0.129$), a significant Platform $\times$ Light interaction ($p = 0.038$) was revealed, indicating that iOS maintains stable performance across lighting variations, whereas Android experiences substantial performance degradation in indoor conditions. These findings provide practical recommendations: iOS is preferable for applications requiring consistent indoor performance, 100 cm represents the optimal interaction distance for both platforms, and Android deployments should implement adaptive strategies for variable lighting conditions.