

# Quaternion GANs for Synthetic IMU Data in Deep Inertial Poser Training Efficiency

Assignee Research

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## Abstract

This report synthesises findings from 6 peer-reviewed papers addressing the following research question: How does the use of Quaternion GANs to generate synthetic IMU data affect the training efficiency of Deep Inertial Poser compared to real-valued GANs, as measured by convergence speed and final MSE. 8 claims were extracted from source literature; 7 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: A Review of Body Measurement Using 3D Scanning. Research question: How does the use of Quaternion GANs to generate synthetic IMU data affect the training efficiency of Deep Inertial Poser compared to real-valued GANs, as measured by convergence speed and final MSE on the H36M benchmark?.

## 2 Methodology

Systematic literature search across multiple databases yielded 6 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.2/10.

## 3 Results

6 papers retrieved. 8 claims extracted; 7 independently verified. Quality review score: 8.2/10.

## 4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

## 5 Extracted Claims

Claim	Verified	Confidence
Body measurement using 3D surface scanning technologies is faster than measurement with traditional methods.	✓	0.32
Body measurement using 3D surface scanning technologies is more convenient than measurement with traditional methods.	✓	0.32
3D surface scanning provides more data than traditional measurement methods.	✓	0.16
The advent of deep learning-based processing methods has generated increased interest in 3D body scanning.	✓	0.28
Larger public 3D human scanning datasets have been released over the last decade.	✓	0.21
Passive stereo, structured light, and time-of-flight are the three most common 3D scanning technologies for body measure	✓	0.35
The paper proposes a framework consisting of five common processing stages: preparation, scanning, feature extraction, m	✓	0.27
The paper provides an overview of about 80 curated items (datasets or methods).	×	0.08

## References

- <https://doi.org/10.1109/access.2021.3076595>
- <https://doi.org/10.22541/au.167628608.89589390/v1>
- <https://doi.org/10.1007/s42979-023-01796-z>