

# 3D Object Recognition Using Affine Moment Invariants and Multiple Adaptive Network Based Fuzzy Inference System

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## ABSTRACT

*This paper addresses a performance analysis of Affine Moment Invariants for 3D object recognition. Affine Moment Invariants are commonly used as shape feature for 2D object or pattern recognition. However, this study proves that with some adaptation to multiple views technique, Affine Moment Invariants are sufficient to model 3D objects. In addition, the simplicity of moments calculation reduces the processing time for feature extraction, hence increases the system efficiency. In the recognition stage, this study used a neuro-fuzzy classifier called Multiple Adaptive Network based Fuzzy Inference System (MANFIS) for matching and classification. The proposed method was tested using two groups of object; polyhedral and free-form objects. The experimental*

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ISSN 1675-7939

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*Esteem Academic Journal*

*results show that Affine Moment Invariants combined with MANFIS network attain the best performance in both recognitions, polyhedral and free-form objects.*

**Keywords:** *3D object recognition, multiple views technique, affine moment invariants, neuro-fuzzy system*