

## ABSTRACT

The finite element method (FEM) is a numerical method for solving problems of engineering and mathematical physics. It is also referred to as finite element analysis (FEA). To solve the problem, it subdivides a large problem into smaller, simpler parts that are called finite elements.

In finite element analysis, mesh density is a critical issue which closely relates to accuracy of the finite element models while directly determines their complexity level. A systematic study on finding the effects of mesh density on the accuracy of numerical analysis results, based on which brief guidelines of choosing the best mesh strategy infinite element modelling are provided.

The quality of mesh plays a significant role in accuracy and stability of the numerical computation regulates type of mesh used in your domain checking the quality of your mesh is essential. The mesh quality for problems modelling complex flows depends on numerical error, the norm used to measure the error and relationship between these qualities and shape elements. This project deals with, to make a standard best practice for mesh density using plate with a small hole at centre and to check mesh quality using L-shape bracket.

**Keywords:** Mesh density, Mesh quality, FEM, FEA, Element size, Maximum angle, Parallel deviation, Aspect ratio, Jacobean factor.