Structural Analysis HW 5

Cameron Cummins (csc3323)

March 2023

1 Introduction

The finite element code for this assignment is contained in **HW5_run.py** and uses the input file **HW5_3D_truss.json**. We make the following assumptions for a unitless analysis:

$$E = 1 \tag{1}$$
$$A = 1 \tag{2}$$
$$P = 1 \tag{3}$$
$$L = 1 \tag{4}$$

2 Structure Analysis

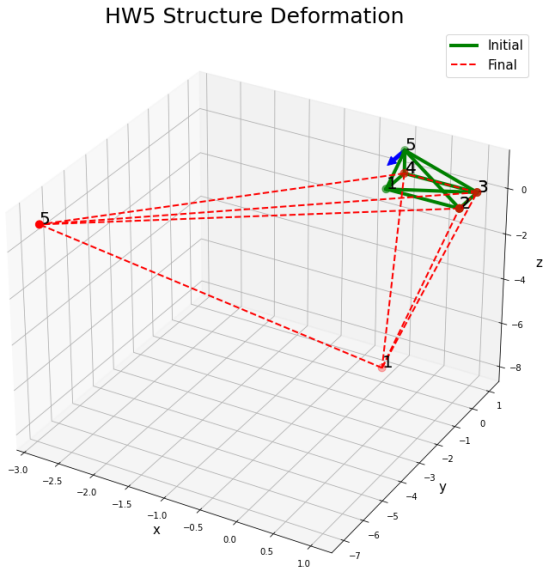

Figure 1: The node labels are the same as the figure given the HW5 assignment, but the perspective is different. This does not change the coordinates of the nodes nor does it change the output, this is only an aesthetic difference.

Table 1 shows the nodal displacements for this particular structure and loading. Note that all values are in the units of $\frac{PL}{EA} = 1$ and thus scale accordingly.

Node	u	v	w
1	0	0	-8.024
5	-2.8284	-8.0246	~ 0

Table 1: Nodal displacements for HW5 3D truss structure. Note that for the w component of node 5, the displacement is near zero.