

CAS 741: Problem Statement

Truss

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Table 1: Revision History

Date	Developer(s)	Change
September 21, 2020	Ting-Yu Wu	Initial Draft

Problem.

A truss is a framework that could hold something up, supporting bridges, roofs, or other structures. This project will focus on solving truss bridge problems. Before operating a bridge, there are lots of testing and evaluations need to be done, one of them is an analysis of trusses. We are trying to figure out whether a bridge is safe enough to support various loads it encounters (e.g., the weight of vehicles crossing it) by analyzing the stresses and unknown forces acting in truss members. Knowing both motions and forces within the trusses prepares us for a better understanding of how stable the architecture is.

We will take the structures of the bridge, external reacting forces, and load forces as inputs, to find out all the internal forces of truss members and also the stress distribution (tension and compression).

Context.

Specific stakeholders may include students, professors, researchers in the field of mechanical and civil engineering, or individuals interested in solving forces of truss members. The software will be compatible with Windows and is likely to run on a variety of operating system environments, such as Linux and MacOS.