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
September 27, 2020	Ting-Yu Wu	Updates according to issue #1

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. The inputs of the software are the structures of the bridge, external reacting forces, and load forces. The outputs are all the internal forces of truss members and their stress distribution (tension and compression).

We will implement the Drasil project on this software. Following is the homepage of Drasil: https://github.com/JacquesCarette/Drasil/.

Context

Specific stakeholders may include students, professors, researchers in the field of mechanical and civil engineering, individuals interested in solving forces of truss members, and all contributors to the Drasil project. The software will be compatible with a variety of operating system environments, including Windows, Linux and MacOS.