IE3087; Network Optimization; HW1*

Luca Wrabetz†

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Introduction

In this report I summarize the findings for an implementation of the Minimum Ratio Spanning Tree (MRST) problem. The problem is a natural extension of the minimum spanning tree (MST) problem with a varied cost structure. Specifically, each edge in the input graph has two values c_{ij}, τ_{ij}. The objective of the problem is to find a spanning tree T^* such that $(\sum_{(i,j)\in T^*} c_{ij})/(\sum_{(i,j)\in T^*} c_{ij})$ is minimized. The greedy algorithm that works for the classical MST problem (and matroids in general) was shown to be ineffective in returning an optimal solution to MRST [1].

1 Algorithm

*Instructor: Dr. Oleg Prokopyev

†PittID Number: 4444255

References

[1] R Chandrasekaran. Minimal ratio spanning trees. *Networks*, 7(4):335–342, 1977.