Bachelor thesis project for Enes Ok and Markus Fenne Karlsen

Title: "Application of Graph Algorithm in Smart Grid"

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This project deals with realizing a new graph algorithm using Python language. The graph algorithm was developed by *Jaiswal & Davidrajuh* [1-3], and it is implemented in MATLAB language. The project can be divided into three stages.

- Stage-1: This stage starts with a study of graph algorithms for finding minimum-weight spanning trees. The relevant graph algorithms are Prim's algorithm [4] and Steiner tree [5].
- Stage-2: Implementing Jaiswal & Davidrajuh's algorithm in Python language and testing it with some examples.
- Stage-3: Implementing the other existing algorithms for the Steiner tree and comparing the efficiency of these algorithms against Jaiswal & Davidrajuh's algorithm.

References:

[1]. R. Jaiswal and R. Davidrajuh (2021) "Optimal Design of Wind Farm Collector System using a Novel Steiner Spanning Tree," Norsk IKT-konferanse, Nov 2021. https://davidrajuh.net/TEMP/NIK-2021.pdf

[2]. R. Jaiswal and R. Davidrajuh (2021) "A Simple Algorithm for finding Steiner Spanning Trees," 2021 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME), Oct 2021. https://davidrajuh.net/TEMP/Simple_Algorithm.pdf

[3]. MATLAB implementation of the new algorithm: https://davidrajuh.net/TEMP/New_Steiner_Algo.zip

[4]. Prim's Algorithm Example: https://www.gatevidyalay.com/prims-algorithm-prim-algorithm-example/

[5]. Steiner Tree: https://www.youtube.com/watch?v=BG4vAoV5kWw