Your Thesis Title

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Chapter 1

Notations

Consider a simple, non-empty Graph $G = (V, E)$ comprising a set of Edges E and vertices E. For specificity, $E(G)$ and $V(G)$ is used to refer to the set of edges and vertices associated with Graph G respectively, where required.Further, denote by $|V|$ the cardinality of set of vertices V, let G be a Graph with $|V(G)| = |\{v_1, v_2, \dots, v_n\}| = n$ vertices and $|E(G)| = m$ edges with $E \subset \binom{V}{2}$; where $\binom{V}{2} = \{\langle u, v \rangle \, |u, v \in V, u \neq v\}$, that is, the set of all possible unordered pairs created from V. For each $e = \langle u, v \rangle \in E$, e is said to be incident on $u, v \in V$, whereas u and v are adjacent to each other.

The Neighbor set $\mathcal{N}(v)$ of $v \in V$, defined as $\mathcal{N}(v) =: \{w \in V(G)|v \neq w, \exists e \in E(G)\}$ is the set of vertices (other than v) adjacent to $v\tilde{\mathcal{V}}\bar{\mathcal{V}}$. Given a Graph $\mathcal{G}$, $\mathcal{G} \subseteq G$ denotes that $\mathcal{G}$ is a subgraph of G, if it holds that $\forall e \in E(\mathcal{G}),\ u, v \subseteq V(\mathcal{G})$, $V(\mathcal{G}) \subseteq V(G)$ and $E(\mathcal{G}) \subseteq E(G)$.

The adjacency matrix of a weighted graph G is a symmetric matrix $A \in \mathbb{R}^{n \times n}$ with ith row and jth column containing the number of edges incident on vertex v_i and v_j. More precisely, let $\omega : \{0, 1\} \mapsto \mathbb{R}$ for $i, j \in \{1, 2, \dots, n\}$

$$A_{i,j} = \begin{cases} \omega(e_i), & e_i = \langle v_i, v_j \rangle \in E(G) \\ 0, & \text{otherwise.} \end{cases} \tag{1.1}$$

By restricting (1.1) $\omega \in \{0, 1\}\ \ \forall \omega(e_i),\ e_i \in E$, we recover the adjacency matrix of an unweighted graph. The volume $vol(F)$ of a a subset of nodes $F \in V$ is the sum of weight of edges adjacent to the nodes of F and given as $vol(F) = \sum_{v_i \in F} \delta(v_i)$; where

$\delta(v_i)$ is the degree of vertex v_i obtained as the sum of the weights of edges incident on it: $\delta(v_i) = \sum_{i=1}^{n} A_{i,j}$.

Denote the number of components in of graph G by $\kappa(G)$. For the a set $V^* \subseteq V(G)$, V^* is a cut-vertex if $\kappa(G[V(G) \backslash V^* = \tilde{V}]) > \kappa(G)$

Chapter 2

Related Work

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Chapter 3

Method

Here is a sentence, and you can see a nice picture in Figure 3.1.

Figure 3.1: A picture of the Brayford from Google Images.

Also, a table can be found in Table 3.1. You should use a LaTeX table generator like `https://www.tablesgenerator.com/` if you want to make your life easier.

Table 3.1: Here is a table. The caption goes above like this.

First name	Last name	Age
Bob	Bobbington	24
Benth	Wavies	49
Joe	Bloggs	37
Billy	Bob	10

Chapter 4

Conclusions

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